RISC
user
JANUARY/FEBRUARY 1995
Volume 8 Issue 3
Price £2.10
The magazine for users of Acorn RISC computers
DTP Workshop
The Practical Approach to Publishing
ovation
for the Archimedes and A3000
Get Connected
Acorn's Networking and Comms Plans Unveiled
CD Drive Round-up
How to Create Relocatable Modules
Colour-Graduated Text

THE MAGAZINE FOR USERS OF ACORN RISC COMPUTERS

RISC user

Now that the Online Media trial in Cambridge is well under way (see the article on page 57 of this issue), it's interesting to have a look at what OM's competitors are doing. Interactive multimedia is potentially very big business indeed, and it's hardly surprising that there is a lot of corporate interest at the moment.

First of all, there is British Telecom. BT has a problem at present, in that the cable TV companies are allowed to provide telephone services over their networks, while BT is prohibited from supplying broadcast video over its telephone lines. BT considers this situation to be unfair, and believes that video-on-demand, whereby viewers choose what and when to watch, will overcome this restriction. This was a primary motive for BT to start a trial of its own using different technology (though no doubt it is alive to the multitude of other possibilities inherent in such a service). However, BT is using analogue technology, while OM's system is digital. The difference can clearly be seen if you watch a video on the BT trial system: the picture quality is noticeably poorer and less stable. There is also a problem with video/audio synchronisation - watch a clip of someone talking, and the lips and voice seem to be coming from different time zones.

An even more threatening cloud looms over OM from across the Atlantic. There are already video-on-demand trials taking place in the USA. One of the larger ones has around 1500 subscribers, who request a video by picking up the telephone and dialling the trial centre. An employee darts across to the shelves and pulls a CD from the rack, dashes across the room and slots it into a machine, pulls a switch and hey presto - video on demand! An unconfirmed rumour has it that employees are provided with roller skates.

With state-of-the-art technology such as this ranged against them, the gurus at Online Media will really have to pull out all the stops if they are to stay ahead of the game!

If this is all too gloomy for you, here is some good news: apparently Acorn is the leading supplier of computers to the lace-making industry.

A happy New Year to all readers!

Alan Wrigley

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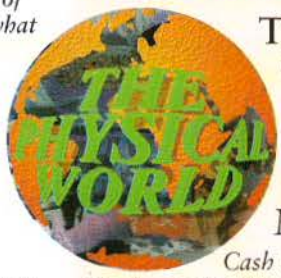

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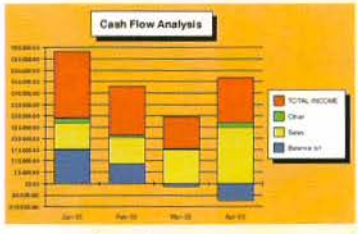

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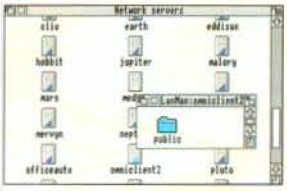

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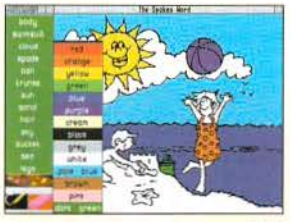

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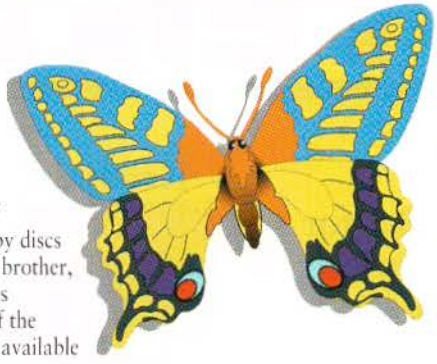
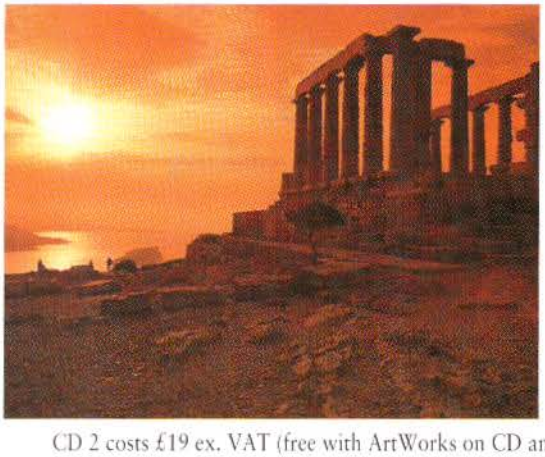
Got a Light, Mac?



Computer Concepts has announced *MacFS Light*, a cut-down version of MacFS which reads and writes floppy discs in Apple Mac format. Unlike its big brother, it does not handle hard discs, such as Syquests, but it does weigh in at half the price: £49 ex. VAT. A site licence is available for £149 ex. VAT.

CC has also just launched a new ArtWorks tool, *Arranger*. This is described as a magnetic tool, which enables you to create guidelines to which your drawing can be aligned. The guidelines can be any shape, not just straight lines. Dragging a point or an object close to a guideline snaps the object to the line. Arranger costs £29 ex. VAT.



Also new from CC is the *Clip-Art CD 2*. This contains a wealth of graphic image material - 450 of the best entries for the 1994 ArtWorks competition, plus over 100 24-bit photographs taken by professional photographers. The CD-ROM includes the *Portfolio* application for sorting and viewing the images. Clip-Art CD 2 costs £19 ex. VAT (free with ArtWorks on CD and Pioneer CD drives). Computer Concepts is at Gaddesden Place, Hemel Hempstead HP2 6EX, tel. 01442 63933, fax 01442 231632.

Ticking Off for ARM

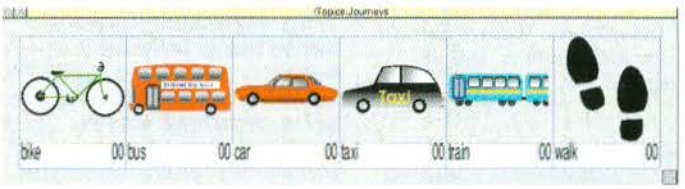
Processor chips can't normally operate without a clock signal to ensure that all operations keep in step with each other. However, ARM Ltd is now collaborating with a research team from Manchester University led by Steve Furber to develop asynchronous chips. The Manchester team has already created an asynchronous chip based on the ARM60, called Amulet1, which is claimed to be the world's first fully asynchronous implementation of a commercial processor. Asynchronous designs have three main advantages over clocked chips. Firstly (and this is where they get their name) all circuits run at their own speed, which means that the chip is no longer clocked down to the speed of the slowest circuit. Secondly, this approach uses less power, since power is only drawn when something happens, whereas conventional chips use power continually as each chip draws current at every clock pulse. And thirdly, with chips getting ever larger it becomes increasingly difficult to keep the whole of a clocked chip in sync, because of the time delay in the clock signal reaching outlying parts of the chip. ARM Ltd can be contacted at Fulbourn Road, Cherry Hinton, Cambridge CB1 4JN, tel. 01223 400400, fax 01223 400410.

VTI Loses its Ertical Wist

Vertical Twist has decided that its name is a little too offbeat for today's discerning Acorn customer, and has become plain old VTI. Its range of products has recently been expanded by two newcomers. The *Printer Port Sampler* is a budget sound sampler similar to those reviewed in RISC User 8:2. It comprises a microphone, a box with mic and line inputs that plugs into the printer port, and a sample manipulation software package. Also included is a program called *Talking Canvas* which is a simple multimedia application enabling teachers and children to link images and sounds. The complete sampler package costs £44.95 ex. VAT.

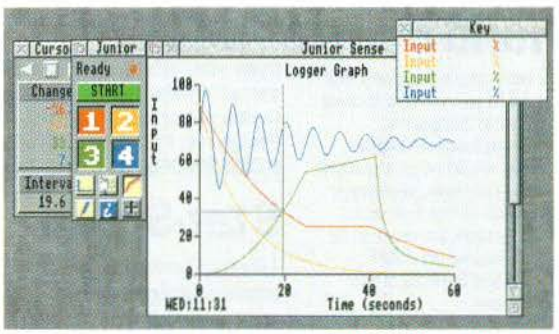
VTI's other new product is *HeartBeat*, which is a heart monitoring package consisting of both hardware and software. The package contains a cordless transmitter unit which straps onto the chest, a receiver unit which plugs into the serial port, and a software application to record and analyse heart information. The complete package costs £99 ex. VAT.

Logotronic Launches



Longman Logotron has several new products scheduled for launch at BETT. *Picture Point* is a talking graph package for children at Key Stage 1, which aims to familiarise them with the basic concepts of data handling. Data can be presented in bar chart, pie chart or pictogram format, and a facility exists for the graphs to speak in order to explain the relationship between the numbers on the graph. The package comes in two parts: a designer program for teachers to create exercises and a collector program for children to work with. *Picture Point* costs £29 ex. VAT.

Rainbow is a multimedia authoring package which allows pictures, animations and video to be combined with text, speech, music and sounds to create a range of multimedia projects. The package is claimed to be flexible and straightforward to use, and costs £29 ex. VAT.



Junior Insight is a data logging program aimed at Key Stages 2 & 3. It is compatible with many popular data capture interfaces, and allows the user to capture and display both analogue and digital data. The data can be displayed as tables or graphs, and analysis options are included to enable calculations to be made on the data. *Junior Insight* costs £44 ex. VAT. For further details of this and all other Longman products, contact Longman Logotron at 124 Cambridge Science Park, Milton Road, Cambridge CB4 4ZS, tel. 01223 425558, fax 01223 425349.

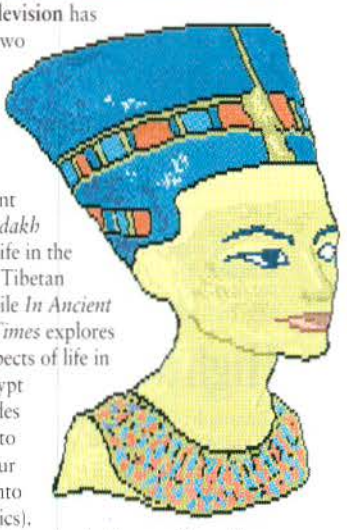
NEWS IN BRIEF . . .

Intelligent Interfaces has launched the *IGLib Fortran Graphics Library* at £25 ex. VAT, which enables Fortran programmers to exploit the benefits of the high resolution and 24-bit colour capability of the Risc PC. Contact the company at PO Box 80, Eastleigh, Hants SO53 2YX, tel. 01703 261514, fax 01703 267904.

Oak Consultants (not to be confused with Oak Solutions) is selling heavy mouse balls at £3.00 inc. VAT for users who are fed up with the poor response of their lightweight mouse. The ball is claimed to give the mouse a more positive feel. Oak Consultants is at Sun Cottage, High Street, Hatfield Broad Oak, nr. Bishops Stortford CM22 7HE, tel. 01279 718596, fax 01279 718767.

The Dyslexia Computer Resource Centre, in association with the British Dyslexia Association, has a booklet available on Software for Dyslexics on Acorn Computers, price £2.00. Contact them at the Department of Psychology, University of Hull, Hull HU6 7RX, tel. 01482 465589, fax 01482 465599. The Centre has a range of other material to aid dyslexics, and also organises conferences on the subject.

Anglia Television has produced two new datafiles for use with its Key data management system. *Ladakh* compares life in the UK with a Tibetan village, while *In Ancient Egyptian Times* explores various aspects of life in ancient Egypt (and includes the ability to convert your own text into hieroglyphics). Anglia TV is at Anglia House, Norwich NR1 3JG, tel. 01603 615151.



Showing Off in Harrogate

The Acorn User Spring Show has established itself as a regular feature. The 1995 event will be the third of its kind, and once again it will be held at the Harrogate International Centre. The dates are 6th-7th May (Saturday and Sunday). This is the major opportunity of the year for those who live in the north to catch up with all that's going on in the Acorn world. Beebug and RISC User will of course be there - we look forward to seeing you.

Easy Text

TextEase is a new desktop publisher from Ivoryash. At £25 inc. VAT it is aimed squarely at users on a tight budget, but is nevertheless claimed to be a powerful package. It provides all the basic facilities you would expect from a DTP package including the ability to incorporate pictures. A demo disc is available for £2.00. For further details contact Ivoryash Ltd, The Old Courthouse, St Peters Church Yard, Derby DE1 1NN, tel. 01684 73173.

Welcome to TextEase
We think that you will find that TextEase is a fun product to use. We hope it gives you pleasure as well as improving your productivity.
This !ReadMe contains important information on
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Product use
Installing
Printers and fonts
!Scrap
Making the most from TextEase
Copyright
is copyright Ivoryash Limited 1994. Each copy is identified with a serial number and the purchaser's name. Please do not infringe our copyright.

Eesox Cuts the Cost of Driving

Eesox has announced two new ranges of affordable CD drives, known as *Silver* and *Gold*. The Silver range uses double-speed units, and is reviewed in our CD drive round-up elsewhere in this issue. Prices are £109 for the internal drive and £179 for the external variant. The Gold range are quad speed units and cost £299 for internal or £369 for external versions. All prices are ex. VAT. Both ranges are also available as network towers containing 2-6 drives. Prices are available on request, but as an example, a tower containing four Silver units would cost £449 ex. VAT. For further details contact Eesox at 5 Hillfield Road, Comberton, Cambridge CB3 7DB, tel/fax 01223 264242.

Everyone a Winner

Not won the Lottery yet? Try *Otteryl* from Cherisha Software, which will help you to analyse the results of previous draws to aid your selection of numbers. It won't guarantee a win, but at least when you lose you can blame the computer! *Otteryl* costs £3 inclusive and is available from Cherisha Software, 51 Swallowfield Road, Charlton, London SE7 7NT, tel. 01956 389500.

An ARM in the Hand?

Rumours have been circulating that Psion plans to use an ARM processor in its next generation of palmtop computers. Although Psion has refused to confirm this, the ARM chip would be an attractive proposition for the company, allowing it to incorporate speech recognition in its next machine. If the rumours prove to be true, perhaps we could see an ARM-powered Acorn Pocket Book III in the not-too-distant future?

Highway Minerva

Minerva has set up an offshoot company named Zynet to act as an Internet and World Wide Web service provider. Based at Minerva headquarters in Exeter, it will initially be aimed at users in the South West of England, with access to local information, but during 1995 the company hopes to expand its number of access points into other areas. There will be a comprehensive series of options for the education market, reflecting Minerva's strong association with education. Easy-to-use software will be provided. For more information, contact Zynet at Minerva House, Baring Crescent, Exeter EX1 1TL, tel. 01392 426160, fax 01392 421762.

New Arrivals from Hampshire

New products from Hampshire Microtechnology Centre due to be launched or demonstrated at BETT include new and updated CD-ROMs, as well as special needs software.

Exploring Earth Sciences - Glaciation is a new CD-ROM designed for GCSE and A-level students and explores all aspects of ice sheets and valley glaciers, and the resulting erosion and depositional features. It will be available in Spring 1995, and the single-user price is £40 ex. VAT. *Usborne Exploring Science (Physics)* is another new CD-ROM, aimed at Key Stages 2 & 3 and exploring the principles of physics through pictures and sound. Also available in the Spring, it will cost £75 ex. VAT. Hampshire's earlier Usborne CD-ROM, *Exploring Nature*, is also being updated.

Other new CD-ROMs due for launch shortly are *Trees*, an encyclopedia of British native trees with full ecological information, and *Art South*, which is an encyclopedia of art treasures from Hampshire museums.

On the special needs front, Hampshire is launching *InTouch* - a concept keyboard package designed for children with severe learning difficulties. It provides facilities for such activities as picture, symbol, colour, object or number recognition, and sound samples can be added. The price of *InTouch* is £40 ex. VAT.

For further details of these and many other educational programs, contact Hampshire Microtechnology Centre at Connaught Lane, Paulsgrove, Portsmouth PO6 4SJ, tel. 01705 378266, fax 01705 379443.

Star-Stuck

LabelStar from Circle Software is a labelling application offering both text and graphic labels and a built-in address database. The program features on-screen layout of label sheets, use of outline fonts and images for graphic labels, and text mode printing if required for fast output. LabelStar costs £49.50 ex. VAT and is available from Circle Software, 33 Restrop View, Purton, Swindon SN5 9DG, tel. 01793 770021.

Volume 7 Special Disc

£7.95
Members ex VAT
Special Price Expires
28th February 1995

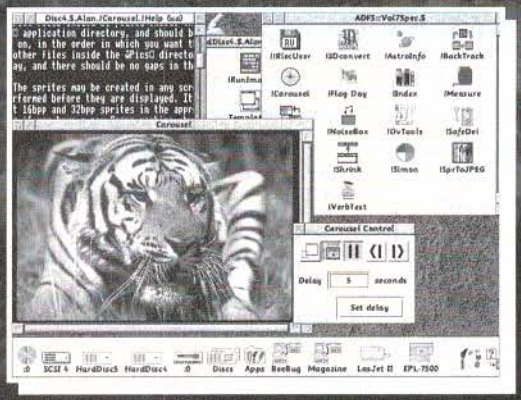
Once again it's time for our annual compilation of all that's best from the past year's magazine discs. As usual, we've come up with a terrific collection of items, with something for everyone. The Volume 7 Special Disc is superb value for money - where else could you get thirteen useful software packages for £7.95 ex VAT? (Non members £13.57 ex VAT) Code PV7Sa.

3DCONVERT
Create stunning 3D images from sprites with this application - and no red and green glasses!

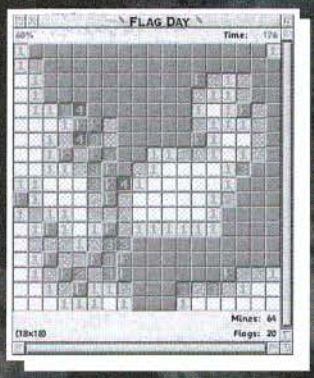
ASTROINFO
Provides extensive astronomical information on the Sun, Moon and planets from any given longitude or latitude. Ideal for classroom use, or for astronomy fans.

BACKTRACK
If you get bored with seeing the same old backdrop sprite all the time, this is just the utility for you! It allows you to cycle through a number of backdrops, tiling or scaling the sprites as required. No more terminal boredom!

DESKTOP CAROUSEL
Display your favourite pictures on the desktop with this multi-tasking carousel. The image can be resized at will, and the cycle rate of the carousel can be altered.



Desktop Carousel



Flag Day

FLAG DAY
Is there anyone who hasn't at some time been totally hooked on one of the endless variants of the classic minesweeper game? We make no apologies for bringing you another, which runs on the desktop, and has stunning graphics and many different configuration options. This has to be one of the best implementations of the concept around.

TAPE MEASURE
This is a very useful application that enables you to make measurements on screen, in OS units, pixels or text characters. It's invaluable for designing and manipulating windows and icons, or for quickly counting characters in a window. It also has a handy screen magnifier.

NOISE BOX
Does your desktop sound tired? Liven it up with this application which allows you to assign your own sounds to common desktop actions - open windows with a bang, or give a whole new meaning to the word "crash".

OVATION TOOLBOX
All Ovation users will find this a godsend. It enables you to access many of the program's style functions from a toolbox - for example bold, italic, justification and much more.

SAFE DELETE
Oh dear - your seven-year-old has just accidentally deleted your latest masterpiece... but it's still there, thanks to Safe Delete! This application retains copies of deleted files in an invisible dustbin, saving you and your family great deal of strife.

SHRINK
Shrink your windows to just the title bar and park them out of the way with this application. Unlike the iconising facility of RISC OS 3, this allows you to see the title of your shrunken window at a glance.

SIMON
A classic game brought to your desktop! Have fun with the family, by replicating the sequence of lights in a test of mental agility!

Sprite_to_Jpeg

SPRITE-TO-JPEG
JPEG is *the* way to store and transfer photographic images on a computer, and the format is recognised by many applications that handle images. This powerful application will convert any Acorn sprite, including the new 16- and 24-bit varieties, into a JPEG file.

FRENCH VERB TESTER
We 'ave ze perfect answer to help you parler Français with flair. So pick up la plume de your tante and write a lettre d'amour to your French penfriend.

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SLEUTH 2

PROFESSIONAL OPTICAL CHARACTER RECOGNITION

THIS NEW VERSION OF SLEUTH TAKES OCR ON ACORN SYSTEMS TO TRULY PROFESSIONAL LEVELS WITH SUPERB NEW FEATURES LIKE AUTO PAGE ZONING, STYLE RECOGNITION, FULLY INTEGRATED SPELLING CHECKER AND GUIDED EDITING.

SLEUTH CONVERTS SCANNED IMAGES OF PRINTED MATERIAL AND CONVERTS THEM INTO ASCII FILES. VERSION 2 CAN ACHIEVE OVER 99% ACCURACY ON GOOD QUALITY IMAGES, AND CAN HANDLE VIRTUALLY ALL POPULAR TYPEFACES IN A WIDE RANGE OF SIZES AND STYLES. ALL WITHOUT THE NEED FOR ADDITIONAL TRAINING.

YOU WILL NEED 4MB RAM AND AN ACORN-COMPATIBLE SCANNER WITH A MINIMUM RESOLUTION OF 300 DPI. SLEUTH CAN SCAN IMAGES DIRECTLY USING TWAIN DRIVERS, WHICH ARE AVAILABLE SEPARATELY.

- *Integrated Spelling Checker — checks words as they are converted giving high levels of accuracy.*
- *Recognises Plain, Bold, Italic and Bold Italic styles — recognises and displays different weights and allows them to be exported in RTF format.*
- *Automatic page zoning — can convert entire entire complex pages, containing multi-column text and graphics. It converts the text in a sensible order and ignores the graphics.*
- *Manual page zoning with multiple zones — zones may be drawn around the areas of the image to be converted and links used to specify the correct order. Areas of the image can be ignored using 'Ignore' zones. Zones may be saved in template files for future use.*
- *Guided editing — identifies and locates possible conversion errors for easy correction. It is multi-tasking, allowing corrections to be made whilst converting the rest of the image.*

Flatbed Mono & Colour Scanner Packages from £479

- Compact A4 flatbed scanner. Either the Canon IX3010 300 dpi scanner offering 256 grey levels or the Canon IX4015 400 dpi colour scanner.
- Sleuth version 1.5.
- ImageMaster image processing software & Twain scanner driver.
- Optional SCSI interface & connecting lead. SCSI interface is required to connect the scanner.

Prices

Sleuth 2	£99
Upgrade Sleuth 1 to Sleuth 2	£49
Mono package with SCSI interface	£569
Mono package without SCSI interface	£479
Colour package with SCSI interface	£754
Colour package without interface	£664

When ordering please state the system you are using. Add £49 if you want Sleuth 2 instead of Sleuth 1.5. Please add carriage of £1.70 for Sleuth 2, £0.85 for Sleuth upgrade and £8 for scanner packages. Please add VAT to all prices.

Sleuth 2 requires RISC OS 3.1 or later.

For more information call 01727 840303 or to order direct call 01727 840305.

BEEBUG

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Best Bet for Networking

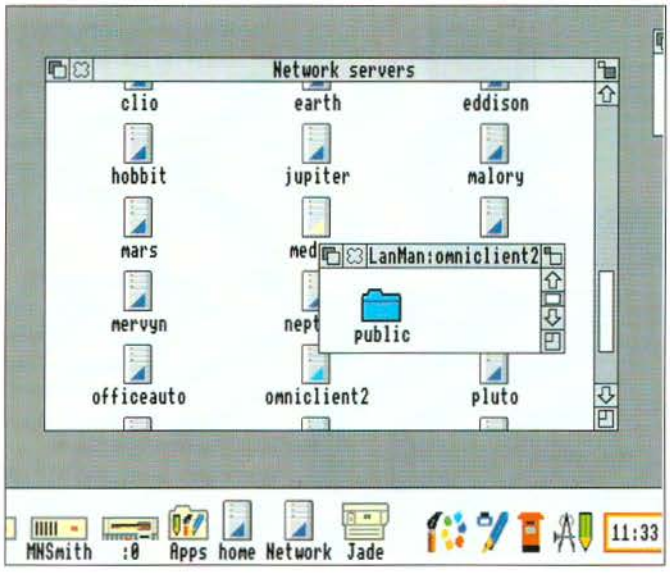


Figure 1. OmniClient in use at Acorn to access a windowful of 'foreign' servers.

Lee Calcraft gives the low down on Acorn's five new networking and email products to be launched at BETT

Acorn are planning to launch at BETT a clutch of new networking and comms products. Three of these are Acorn Access-related. The fourth is an email product called InterTalk which handles Internet access, while the last is called OmniClient, and permits RISC OS machines to be used on non-RISC OS networks. All five products are expected to be available some six weeks after BETT. Here, in reverse order, is what will be on offer.

OmniClient

If your school or office uses a non-RISC OS networking system, you cannot run your Acorn from the network. This is a pretty serious restriction, since it means that none of the network's shared resources are available to your machine - be they the files from a colleague's computer, or shared devices such as printers, hard discs, CD-ROM drives etc. But all that is set to change simply by running an ingenious piece of software called OmniClient.

By installing an Ethernet card in your machine, and running OmniClient you achieve instant connectivity with NT Server, Windows for Workgroups, LAN Manager and NFS Solutions networks running on PC or Apple Macintosh platforms; and it is planned that EtherTalk, AppleTalk and Novell networks will be added to this list in a few months. What's more, this feat is achieved without making changes to the server software; and the client machine, which must have RISC OS 3.1 or later with at least 2Mb of RAM, does not even need a hard disc. Even the OmniClient software itself can reside on the 'foreign' host. The software cunningly represents data on the server in a format applicable to the host's operating system, so that files and directories can be equally well understood by both host and client alike, regardless of which created them.

While RISC OS can obviously not run executables created on other platforms, the system does cater for the unfettered use of certain common file types such as JPEGs, MPEGs, GIFs, TIFFs and text files. And in such cases the files can be accessed with equal facility from both RISC OS and the host's native platform.

InterTalk

For potential Acorn Internetters the wait is almost over. InterTalk is Acorn's new email and Internet application suite, briefly described in our Acorn World roundup last month. It is again aimed primarily at the education sector, but is equally applicable to business users and enthusiasts alike.

The InterTalk suite is designed to provide an internal email service for users of local area networks, which

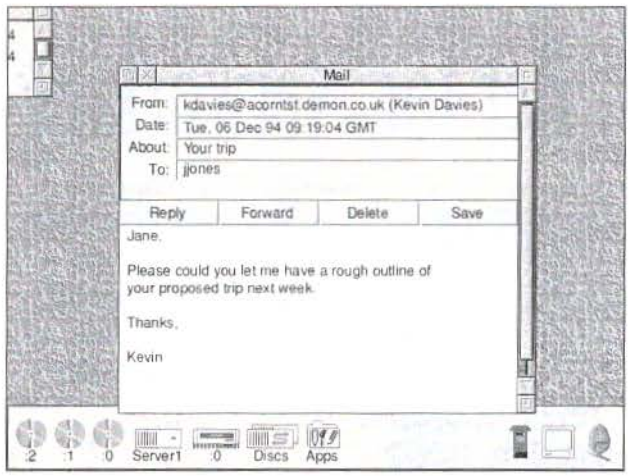


Figure 2. Reading incoming mail.

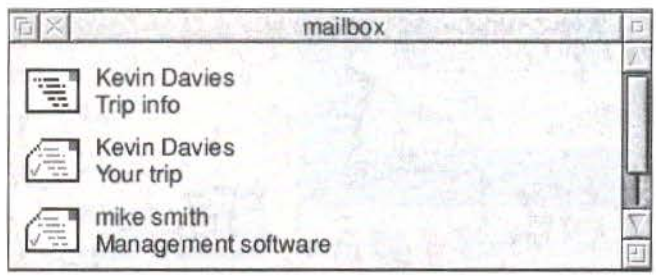


Figure 3. Read and unread mail stacked up in the mailbox.

can be linked via a single comms connection (modem and telephone line) to the Internet, instantly giving world-wide access. In the first release of the product, both email and newsgroups will be supported, but extensions are already in the pipeline to provide a World Wide Web browser, and ftp facility.

The system has been designed to give plug-and-go access to the Internet, without the massive trials and tribulations experienced by those currently using PD Internet software on Acorns. This spirit of keeping it simple is also applied to the work of the system administrator, who will be able to maintain lists of users and passwords, and even restrict the newsgroups and so on which network users may access. The administrator also has control over the times when comms links are established, and this can easily be automated to take maximum advantage of cheap telephone rates.

Single users are also fully catered for with this package, which opens up the world of email and Internet newsgroups to anyone with a modem and an Internet account.

Treble your Access

Last but by no means least we come to the trio of Access products. Acorn Access provides a so-called peer-to-peer network in which up to a dozen or so RISC OS machines can share hard disc and printer resources without the need for dedicating a particular machine to the task of file server.

The system uses Ethernet connections to link participating machines in what is very much a plug-and-go solution. You plug a card into each machine (essentially an Ethernet card with slightly different software in ROM), and link the sockets on each card with a co-ax cable. When you next power up you will find an extra drive icon on the icon bar, and this can be used to access all drives on participating machines which have been made available for sharing.

I have been using Access to link an A540 to a Risc PC, and I have to say that it really does work exceedingly well. It provides very fast access (of the order of 450Kb/sec), it works faultlessly, and so well is the whole system integrated that you are not really aware which machine is supplying a particular file unless you study the drive lights.

Enter Access Release 2

Access release 2 will do all this and more, and will be available as a ROM upgrade to current Access users. The ROM has been recoded to integrate more fully with low level TCP/IP software, it will be significantly faster, and will allow you to share CD-ROMs on a peer-to-peer basis. These will be shared in exactly the same way as hard drives, providing a most useful enhancement to this package. To assist with drive-intensive operations like playing Replay files from a shared CD drive, Access 2 provides a configurable data cache which operates from the RAM of the host machine.

The second product in the range, *Access+*, is offered as an alternative to Access 2. While the latter is targeted largely at the primary education sector, Access+ is aimed at secondary schools. As such it contains enhanced security features, and provides a means of establishing which users or groups of users will have access to which resources. With Access 2 by contrast, if a resource such as a hard disc is shared, then anyone on the network can have access to it. Access+ also permits peer-to-peer sharing of CD-ROM drives across AUN gateways - which Access 2 does not. Access+ on the other hand is supplied without Ethernet cabling and connectors.

The third product in this happy trio, *Access CDShare*, is used to enhance the CD-ROM sharing capability of Access 2 and Access+. Unlike its hardware cousins, Access CDShare is supplied on floppy disc, and is run on a machine which has either Access 2 or Access+ already installed. Its purpose is to allow the host machine to share its CD-ROM drive on a site-wide basis, rather than simply peer-to-peer. It achieves this feat by cacheing data from the CD-ROM using a secondary cache held on its hard disc, in addition to the RAM cache used by Access2 and Access+. With this approach a number of clients can all access the same CD-ROM drive simultaneously.

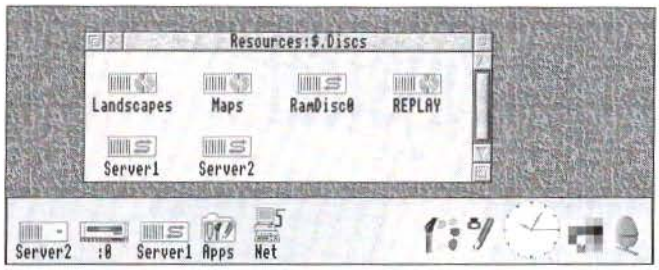


Figure 4. Sharing hard discs and CD-ROMs with the new version of Access.

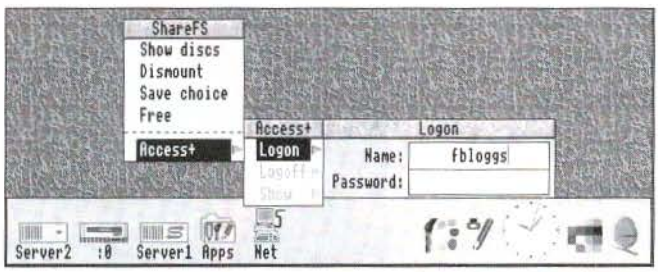


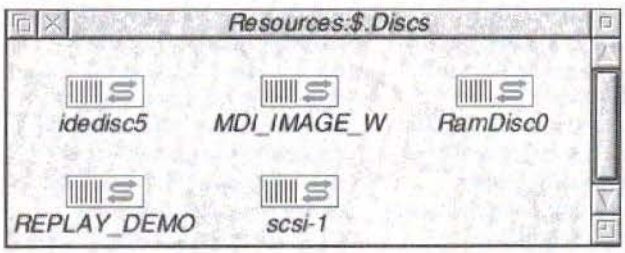
Figure 5. Access+ provides password protection.

The Waiting is Nearly Over

These five products, and in particular OmniClient and InterTalk obviously fulfil long felt needs in the Acorn market. Their specifications are impressive, and they will undoubtedly prove popular in the Acorn world. At the time of writing, details such as cost and full specifications have yet to be decided, but by the time that you read this, all five will have been officially launched. All being well we will not have too long to wait before we can get our sticky hands on them.

Beebug will be extending their range of network products to include OmniClient, Access 2 and Access+ compatible cards, as well as offering upgrades for existing Access 1 users. Look out too, at BETT for some exciting new network developments from Beebug.

Sharing CD-ROMs with Access 1



Sharing two hard drives, a RAM disc and two CD-ROMs using Access version 1.

When Access version 2 becomes available it will offer enhanced facilities for sharing CD-ROM drives, but although it is not documented, you can actually do this with the current version of Access. You can even share RAM drives - if you really want to!

All you do is to issue the command:

```
Share CDFS::0
```

or whatever, on the host machine. This can be included in a boot file if you wish, and if you really do want to share the RAM drive - just use:

```
Share RAM::RamDisc0
```

All these new shared drives appear in the client's Resources:$.Discs window which opens when the Share icon is clicked on a client machine.

On Access version 1, the same icon is used for each, but on version 2 a special CD drive icon is used. But the intriguing thing is that, on Access 1 at least, the CD-ROM drive appears on the client machine with the name of the CD-ROM which happens to be in the drive at the time that the share command was made. If you change the CD-ROM in the host's drive, you need to issue another *Share* command to share it. The best way to manage all this is to have two Obey files on the pinboard of the host: one to share, and one to unshare the current contents of a particular drive. Each file would have a single command:

To share a CD-ROM:

```
Share CDFS::0
```

To unshare it when the CD-ROM is removed:

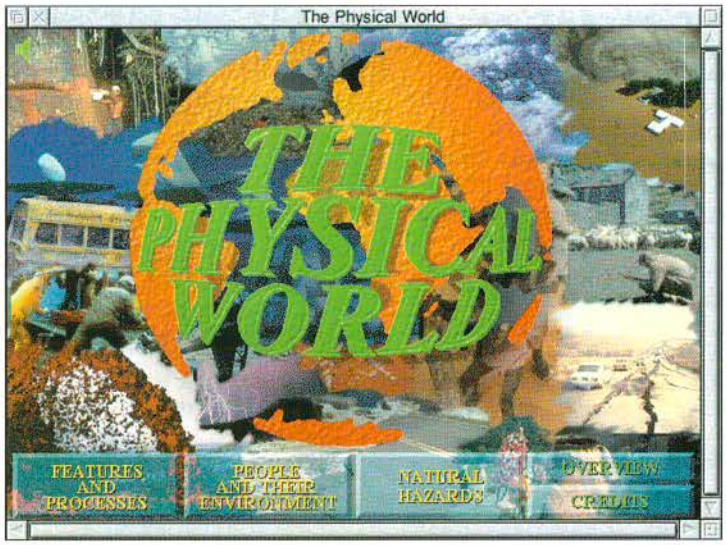
```
UnShare CDFS::0
```

By double-clicking on these pinboarded files at the appropriate point you can determine exactly which CD-ROMs are being shared, and which not.

Of course for serious multi-user sharing you will have to wait for Access CDShare.

Let's Get Physical

Nelson Multimedia is the latest major publisher to enter the Acorn market. Helen Melhuish looks at one of their first products - The Physical World



A new release at Acorn World in October was *The Physical World*, a geographical reference CD-ROM from Nelson Multimedia. The opening animation reveals that it has been created "in partnership with ILP", the company that produced the Science Series CDs along with other very well received titles. In fact, it transpires that Nelson Multimedia, which is a subsidiary of the book publisher Thomas Nelson, was set up specifically to oversee the integration of Interactive Learning Publishing into the Nelson empire.

Beneath its highly attractive and professional looking packaging lies a collection of data presented in a variety of ways; video clips, animations, pictures, audio and text are available - all the things we have come to expect from an interactive CD. This may worry those who are still sceptical about the value of such collections, but there are no gimmicks here.

Information on the disc is available through 'slides'. These are not just pictures, but are pages that also include one or more pages of text as well as all the control buttons. The data is divided into three main sections: *Features and Processes*, *People and their Environment* and *Natural Hazards*. The database that makes up the Features and Processes section contains video clips, animations and photographs to help illustrate various aspects of physical geography. The other two sections describe case studies from around the world, such as the recent Lyme Regis canoe tragedy, the eruption of Mount Pinatubo and the San Francisco earthquakes. The inclusion of some video clips that have been taken from Independent Television News bulletins adds even greater authenticity to some of these case studies. The information is presented clearly throughout and the user interface is highly intuitive.

Tools

A variety of tools is available to get the best out of the huge store of data. An index allows you to carry out a simple search. Just clicking on an item in the index loads the relevant slide. Clicking on any text that is green provides a definition from the glossary. Alternatively the complete glossary is available in a separate window, the words being spoken when they are selected.

The Checklist on each slide shows the key points of the current topic. Items can be ticked off as the relevant areas are covered. Each topic has a review module which will set questions based on that area of study. Other related topics are accessible from the slides, as is the Compare facility which allows comparison between two topics side by side in one window.

Extracting and handling information can be carried out in several ways. The *Trailsave* tool allows users to create their own

collection of slides which can be saved, loaded or viewed at any time. Slides can be rearranged and deleted in the Trailsave window, and the trail can be added to at any time by the click of a button in a slide window. Data can be extracted from any slide via a menu; pictures are saved as sprites, text as plain text or rich text format (for exporting to desktop publishing programs) and video and animations as Replay files.

The Scrapbook application comes on a separate floppy disc. It provides a simple way of presenting more selective pieces of data than the Trailsave function. A new scrapbook is created by selecting the required information (text, video, etc) from individual slides and assigning a page number to each. When the scrapbook is viewed the selected information is collated and tools are provided for moving through the pages, looking at pictures full size, magnifying them and for recording sounds.

The Physical World
The long profile of a river
process is repeated, the waterfall retreats upstream leaving a deep, steep-sided gorge. In Brazil the river Iguaçu has cut a gorge 80 m deep through the horizontal layers of harder
and the softer rocks underneath.
Slide 2 of 2
RELATED TOPICS
The Physical World - Glossary
Find: Insolation
Hectare
Herbaceous
Herbivore
Humus
Hydro-electric Power
Hydrologist
Hypothermia
Infiltration
Insolation
Lahars
Latitude
Lava
Insolation: short for Incoming Solar Radiation, is the energy given off by the sun. About 45% of insolation is absorbed at the Earth's surface, the rest being absorbed in the atmosphere, scattered by clouds or reflected by clouds and the ground.
View item
Close
The Triassic period stretched from 225 to 190 million years before present. This period saw the appearance of the first small dinosaurs, and the first mammals. In this era Britain was covered by deserts and salt lakes.
HardDisc4
Apps

A typically colourful screen from The Physical World

Assessment

The Assessment Manager can be used to test students on what they have learned from the CD-ROM. Individual student files can be set up, saved and reloaded. Questions are based on the selected topic and sub-topic and are presented in various ways. Some require sequencing of words or phrases, others need answers to be typed, others have a 'true'/'false' or multiple choice answer. Although there is no way to differentiate the questions there are hundreds on the disc, and the different ways in which the questions are posed makes this feature rather better than one might initially expect.

Tests can be carried out in Learning Mode or Test Mode. Learning Mode provides immediate feedback to answers and allows several attempts at answering a question if it is appropriate. Test Mode provides feedback only when a full set of questions has been answered; questions can be timed and answered in any order. Unanswered questions can be abandoned if necessary, and the whole test can be reviewed whilst the appropriate information is found in the database. If you do badly enough on one section the Assessment Manager will instruct you as to which sections of the CD-ROM you need to revise.

The Teacher's Guide that accompanies the CD-ROM manages to provide a clear overview of the disc, and lists sets of "key questions from curriculum frameworks and examination syllabuses" alongside the relevant content. The User's Guide is fairly comprehensive and will not be needed by anyone for long. The whole user interface is quite clear and reliable, though there are one or two stylistic inconsistencies. The whole Scrapbook application could do with a facelift to bring it into line with Acorn style guidelines. The recommended system requirements are RISC OS 3.1, 4Mb RAM and an ARM 3, but the disc will run on a machine with only 2Mb RAM and an ARM 2.

The Physical World

Supplier	**Nelson Multimedia** **Nelson House** **Mayfield Road** **Walton-on-Thames** **KT12 5PL** **Tel. 01932 252211** **Fax 01932 246109**
Price	**£130 ex. VAT**

Conclusions

It is obvious that this CD-ROM has been created in conjunction with teachers and others in education, and it has clear and intentional links with GCSE geography. With the arrival in the IT marketplace of such a leading publisher as Nelson, perhaps even their name alone will accelerate the relatively slow advance of Acorn CD-ROMs in our schools. If the high standard set by The Physical World is anything to go by, let's hope that ILP continue to produce material of this quality under the Nelson label.

Just-A-Page

Disabling left-Ctrl-A

by Andrew Rowland

Have you ever been typing away and looked up to discover that six pages of your latest masterpiece have mysteriously disappeared? What has happened is that when reaching with that little finger for the 'A' key, you hit Ctrl at the same time, selected all your text - and the next keypress replaced the lot! At least Ovation gives you a warning, but Impression doesn't. Of course, all the text is there on the clipboard, but if 'nimble fingered' is not the phrase that best describes your typing ability, it may happen frequently enough to be quite irritating.

I was prompted to do something about it when I saw Peter Bond's letter (Write-Back, RU 7:10 p.68). He is a little hard on Computer Concepts; after all, Ctrl-A is the standard for Select All on the Mac as well for many Acorn programs (and, in fairness, you *can* redefine Ctrl-A within Impression). Still, if RISC User readers can't come up with a handy solution, who can?

My solution is a small module called *CtrlAdis*. Carefully type in the listing, save it first, then run it to create *CtrlAmod*. Install it by double-clicking the file *CtrlAmod*, and you will find that Ctrl-A no longer selects the whole text story. Instead, it assumes you meant to type the letter A, so any clumsiness now goes unnoticed. Of course, it is very handy to be able to select all the text in one go, so use the right-hand Ctrl key to type Ctrl-A instead.

You can install the module permanently inside Impression if you wish. A ReadMe file on this month's magazine disc gives full details.

```
10 REM Program   Ctrl-A disabler
20 REM Version   A 1.00
30 REM Author    Andrew C Rowland
40 REM RISC User Jan/Feb 1995
50 REM Program   subject to copyright
60 REM           Not public domain
70 :
80 title$="CtrlAdis":vs$="1.00"
90 fn$="CtrlAmod":help$="Ctrl-A disab ler by A
C Rowland"+CHR$13+"Copyright (C ) Beebug
1994"+CHR$13
100 help$+="LH-Ctrl A produces a/A. RH -Ctrl
retains its default action."
110 :
120 DIM code 1000:INSV=&14
130 FOR pass=4 TO 6 STEP 2
140 O%=code:P%=0
150 [OPT pass:FNmodule_header(0,init,f
inal,title$,help$)
160 .init STMFD R13!,{R14}
170 MOV R0,#INSV:ADR R1,newINSV
180 MOV R2,#0:SWI "OS_AddToVector"
190 LDMFD R13!,{PC}
200 :
210 .final STMFD R13!,{R14}
220 MOV R0,#INSV:ADR R1,newINSV
230 MOV R2,#0:SWI "XOS_Release"
240 LDMFD R13!,{PC}
250 :
260 .new INSV CMP R1,#0:BNE ni_exit
270 CMP R0,#1:BNE ni_exit
280 STMFD R13!,{R14,R2-R4}:MOV R3,PC
290 ORR R4,R3,#3:TEQP R4,#0:MOV R0,R0
300 STMFD R13!,{R14}:MOV R0,#121
310 MOV R1,#(4 EOR &80):SWI "OS_Byte"
320 CMP R1,#0:MOVEQ R0,#1:BEQ ni_over
330 MOV R0,#202:MOV R1,#0
340 MOV R2,#255:SWI "OS_Byte"
350 MOV R0,#ASC"a":MOV R2,#1<<4
360 TST R2,R1:BNE shift
370 EOREQ R0,R0,#&20
380 MOV R2,#1<<7:TST R2,R1
390 .shift MOVNE R2,#1<<3
400 TSTNE R2,R1:EORNE R0,R0,#&20
410 .ni_over LDMFD R13!,{R14}
420 TEQP R3,#0:MOV R1,#0
430 LDMFD R13!,{R2-R4,R14}
440 .ni_exit MOV PC,R14
450 ]NEXT
460 SYS "OS_File",10,fn$,&ffA,,code,O%
470 END
480 :
490 DEFFNmodule_header(code_start,mh_i
nit,mh_final,mh_title$,mh_help$)
500 [OPT pass:EQUD code_start
510 EQUD mh_init:EQUD mh_final
520 EQUD 0:EQUD mh_title
530 EQUD mh_help:EQUD table
540 .mh_title EQUS mh_title$
550 EQUB 0:ALIGN
560 .mh_help EQUS mh_title$:EQUB 9
570 EQUS vs$+" ("+MID$(TIME$,5,11)+")"
580 EQUB 0:ALIGN
590 .table EQUS mh_title$:EQUB 0:ALIGN
600 EQUD 0:EQUD 0:EQUD 0:EQUD longhelp
610 EQUD 0
620 .longhelp EQUS mh_help$:EQUB 0
630 ALIGN:]=pass
```

BEEBUG Reconditioned Equipment For Sale

With the Risc PC now available ex-stock, we are receiving a constant flow of Acorn computers and monitors in part exchange, so there has never been a better time to buy used equipment. Trade-in items are cleaned and reconditioned and are supplied with 3 months warranty. As a guide we have listed below just part of our current range of equipment. Bear in mind that this changes daily with equipment added, and equipment sold. Monitors are invariably more scarce than computer systems, as such we can usually only sell reconditioned monitors if purchased together with a computer system. We can despatch a complete system anywhere in the UK for only £10, overseas and Channel Islands please contact us for a quote.

Buying a new system? Contact us for a quote on your present equipment. If you are buying a Risc PC we will even take your old system back up to 3 months after purchase.

ACORN RISC COMPUTERS

Code		RAM	H.Disc	OS	Extras	Price
1331	A310	1	20	2		200.00
1444	A310	1	0	2		130.00
1538	A310	2	20	2		195.00
1553	A3000	1	0	2		220.00
1570	A3000	2	0	2		235.00
1579	A3000	2	0	3		270.00
1576	A3000	2	0	3		270.00
1560	A3000	2	0	3		270.00
1568	A3000	4	0	3		315.00
1566	A3000	4	0	3		315.00
1567	A3000	4	0	3		315.00
1502	A440	4	20	2		315.00
1528	A310	4	0	3	ARM3+2FD	335.00
1419	A440	4	20	2	VME+5.25"	335.00
1210	A410/1	1	0	3		350.00
1371	A420/1	2	20	2		360.00
1537	A410/1	2	44	2		380.00
1575	A310	4	170	3	D.Buffer	415.00
1447	A410/1	2	20	3	ARM3	435.00
1530	A410/1	4	0	3	ARM3	435.00
1267	A420/1	4	100	2	LCurve	440.00
1503	A410/1	4	20	3	5.25"	470.00
1515	A410/1	4	20	3	ARM3	480.00
1486	A440/1	4	40	3	ARM3+5.25"	485.00
1531	A440/1	4	47	3	ARM3	495.00
1496	A440/1	4	40	3	ARM3	495.00
1516	A410/1	4	20	3	ARM3	495.00
1521	A410/1	4	20	3	ARM3	500.00
1473	A440/1	4	40	3	5.25"	505.00
1519	A420/1	4	110	3	ARM3/36MHz	510.00
1339	A410/1	4	40	2		510.00
1499	A410/1	4	20	3	ARM3+5.25"	515.00
1481	A440/1	4	40	3	ARM3+5.25" VIDC	515.00
1462	A440/1	4	80	3	SCSI+5.25"	530.00
1480	A410/1	4	105	3	ARM3+SCSI	540.00
1442	A5000	2	40	3		575.00
1554	A5000	2	40	3	LCurve	595.00
1564	A5000	4	40	3		620.00
1572	A5000	4	40	3		620.00
1225	A540	4	100	2	SCSI	630.00
1452	A5000	4	40	3	LCurve	630.00
1511	A440/1	8	40	3	ARM3	645.00

COMPUTERS BBC/MASTER (Typical prices)

BBC B+ 128K	70.00
Master 128	90.00

FLOPPY DISC DRIVES

1175	CD800S occasional fault	50.00
1281	Morley 3.5 A3000 (new)	84.25
1436	CS354 3.5" 80T DS +PSU	60.00
1437	CS354 3.5" 80T DS + PSU	60.00
1438	CD358 Twin 3.5"80T DS + PSU	100.00
1439	CSX400 5.25" 40/80 NO PSU	55.00
1483	CS400 5.25" DS 40/80 + PSU	60.00

MISCELLANEOUS - Various items including modems, colour cards, Genlock, SCSI interfaces, digitisers etc.

PRINTERS

1229	Star Laser Wintype 4000 for PC	300.00
1547	Epson LX-400	60.00
1548	Epson LQ-100	70.00

14" MONITORS (only as part of a complete system)

AKF11, 12, 17 Standard	85.00
AKF18 MultiScan	140.00
EIZO 9060 MultiScan	140.00
Taxan 770, 775 MultiScan	140.00

All prices are ex VAT

BEEBUG Ltd., 117 Hatfield Road, St Albans, Herts AL1 4JS
Tel: 01727 840303 Fax: 01727 860263 Sales: 01727 840305

Video Clips and Sound Bites?

Alan Bonsor examines four products that may provide the perfect solution to that pressing problem of what to do with your Christmas/Lottery windfall

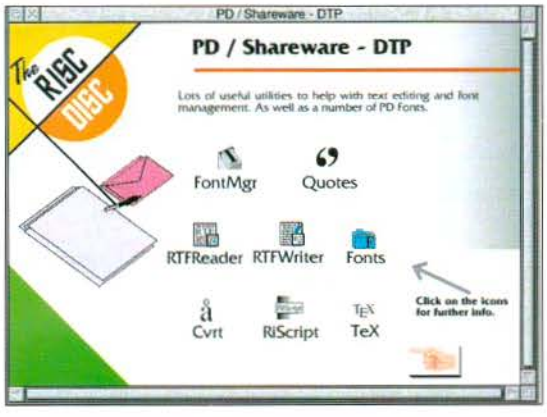
The Risc Disc Volume One

Uniqueway's Risc Disc is a compilation CD-ROM divided into five main sections: Commercial demos (62Mb), PD and Shareware (45Mb), Resources (133Mb), PhotoCD (82Mb), and a number of Useful Text Files. It is designed to be used primarily with Risc OS 3.5 on the Risc PC with at least 4Mb of DRAM and 1Mb of VRAM, although you will find that many of the demos and utilities will run quite happily under Risc OS 3.1. The front end to the disc is quite superb and makes the disc an absolute pleasure to use.

A highlight of the disc is that it contains the entire Volume 7 of Archive Magazine (October 1993 - September 1994). The issues are in Impression format, so if you don't own a copy of Impression, you won't be able to view the files (how about some brilliant programmer out there developing a public domain Impression document displayer!). Considering that a yearly subscription to Archive will cost you £22, it does make the disc good value for money.

There is also a *huge* (24Mb) showroom-style demo from Acorn. It needs at least 8Mb DRAM and 2Mb VRAM to run.

There are around 80 commercial product demonstrations from 31 companies. Many of the demos are cut-down versions of the full applications, so if you've got money burning a hole in your pocket and you don't know what to buy, these demos will probably give you some excellent ideas.



A screen from the Risc Disc

The PD and shareware utilities and applications - 104 of them in total - range from 'totally absolutely must have' to 'not entirely useless'. Some of the more interesting applications are the excellent Powerbase DBMS (version 5.07), a delightfully user-friendly Family Tree application and the highly popular Supergram anagram generator. For programmers, there are Ada and Smalltalk interpreters, the Gnu C/C++ compiler and the full UnixLib, DeskLib and OSLib packages, as well as a very comprehensive Forth Development Environment, a Pascal compiler and a Fortran to C converter. In the DTP directory, you'll find the massive TeX professional typesetting program (the TeX archive alone comes to almost 12Mb). There's also a powerful PostScript Interpreter/Previewer called RiScript which allows the PostScript pages to be saved as Draw files, unlike Computer Concepts' ShowPage application which saved them as Sprite files.

The Utilities directory contains several very useful programs. If you're a CFS user, you'll probably find UnCFS an absolute godsend; SmartCD is the music lovers utility; and if you're into multimedia in any way, you'll find 'players' for AutoDesk Animator .FLI films, Windows 3 Full Motion Video .AVI films and even a software MPEG player, although it doesn't play sound and it's just a touch slow. There is also a small selection of MPEG, AVI, FLI and Replay clips to demonstrate the various players.

The disc contains a selection of good PhotoCD images and is recognised by the CDFS as a PhotoCD disc - if you have Acorn's PhotoView software, it will work perfectly with the disc.

Last but not least, you'll find some Useful Text Files - FAQ's (frequently asked questions) about

CD-ROM, Audio, JPEG, MPEG and the Psion 3, etc.

This is an excellent disc well worth having, and a bargain at £19.95. It gets my nomination for CD-ROM of the year.

BasicAOF

Unlike Acorn's Desktop Assembler, which until recently cost around £150, the Basic Assembler is supplied free with every Acorn computer. Although an extremely powerful and capable assembler, it does have one major limitation. It cannot export ARM Object Format (AOF) files. It is thus not particularly suitable for developing major applications with tens of thousands of lines of source code. More seriously, it does not allow for multi-language development - for example writing the body of an application in C for fast development time and portability, and only the speed critical portions of the code in assembler.

BasicAOF remedies this situation by enabling the Basic Assembler to export AOF files which can then be linked with other AOF files produced by BasicAOF and/or compilers such as C, Pascal, Fortran, etc. This is achieved by including various SWIs or their macro equivalents in your Basic Assembler program, for example:

```
 10 REM >Prog1
 ...
 50 .beep MOV r0,#7:SWI "OS_Writ
eC":MOVS pc,r14
 ...
 80 SYS "BasicAOF_Export","beep_
proc",beep
 90 SYS "BasicAOF_SaveAOF", code
%, P%

 10 REM >Prog2
 ...
 40 .entry_addr BL FNimport("bee
p_proc")
 ...
 90 SYS"BasicAOF_SaveAOF",code
%,P%,,,entry_addr
```

This would create AOF files *o.Prog1* and *o.Prog2*, where *o.Prog1* contains the symbol *beep_proc*, and *o.Prog2* specifies the execution address *entry_addr* of the final program. The final executable program could then be created with:

```
Link -o !RunImage o.Prog1
o.Prog2
```

You will need a linker to make use of BasicAOF, so if you don't own Acorn's Desktop C and Desktop Development Environment, get hold of the Gnu C/C++ compiler which comes with a compatible linker called DRLink.

BasicAOF also has a powerful *FNimport* macro which allows you to use RISC_OSLib C functions in Basic Assembler.

Image bank now handles Draw files

All in all, this is an excellent programmer's utility with just one minor problem - Acorn's Desktop Assembler is currently selling for around £25 - £15 cheaper than BasicAOF.

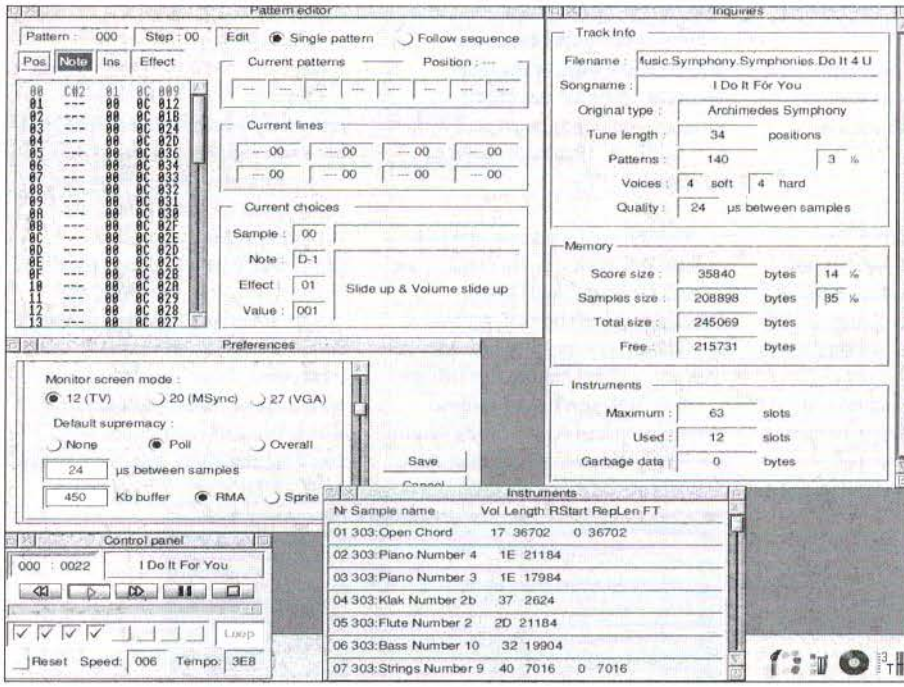
ImageBank

ImageBank is a very popular image manager that provides a simple way to compress, store and retrieve 24-bit images and vector files. It has been available for quite some time now, and an early version was reviewed in RISC User 7:3. At that time however, it was missing several key features, namely image directories, automatic JPEG compression, built in display facilities, etc.

Over the past year or so ImageBank has undergone almost continuous development and refinement, and the latest version to become available is version 0.58.

So what does ImageBank do? It takes Sprite or Clear files, compresses them using JPEG compression, stores these inside its internal directory structure, and creates thumbnail versions of these which are displayed in the ImageBank 'Filer' window, along with lengthy textual descriptions which you can enter either when you drag the image into the window or at a later stage. You can then drag any of the thumbnails out of the ImageBank window to RISC OS applications and the full image will be decompressed and sent to the application. For people who have large clipart collections, ImageBank also allows you to drag Draw files into its window. These will then be compressed using the Squash module and displayed alongside the bitmap images.

The application does have a couple of irritating bugs and features. Firstly, if you want to drag a selection of images into an ImageBank window, you need to hold down the Ctrl key for the time it takes to compress all the images. There is also a nasty bug which affects images that



Digital Symphony in action

have the same or a similar date stamp. When this occurs, ImageBank totally loses one of the images. The menu structure could also do with a tiny amount of rearranging to make it more 'Filer-like'.

Irlam have been informed of these problems, and will probably have a new version available by the time you read this.

ImageBank is an excellent piece of software that should be acquired by anyone who has a large collection of images.

Digital Symphony

Oregan calls it 'The Definitive Soundtrack Editor', and the company is absolutely correct. Since its release in April 1993 Digital Symphony has silenced almost all other SoundTracker applications and has been one of my favourite 'leisure' applications. Unfortunately, the Risc PC suppressed it for a while - a rather nasty compatibility problem gave Digital Symphony terminal nodules on the vocal cords.

Oregan has now performed the necessary surgery and the patient has made a full and remarkable recovery. Not only does it look a lot better following its RISC OS facelift to allow it to use the standard window tools, it actually sounds better as well. You can now customise the VIDC playback speed, so no more problems of a semitone too high or low when using different modes or VIDC enhancers.

The manual has undergone a bit of work as well and is far more understandable for the total newcomer to the arcane world of soundtrackers. For the experts, a ten page Special Effects Guide is also supplied as part of the package.

As far as functionality is concerned, Digital Symphony v1.31 offers little more than the previous version, and the promised direct score editing is still missing. However, this does not detract at all from what is an excellent package.

Product Information

Product *BasicAOF, Digital Symphony*
Supplier *Oregan Software Developments*
36 Grosvenor Avenue
Streetly
Sutton Coldfield B74 3PE
Tel. 0121 353 6044
Price *BasicAOF £39.95 inc. VAT*
Digital Symphony £59.95 inc. VAT

Product *The Risc Disc Volume One*
Supplier *Uniqueway*
42 Crwys Road
Cardiff
CF2 4NN
Tel. 01222 644611
Price *£19.95 inc. VAT*

Product *ImageBank*
Supplier *Irlam Instruments Limited*
Brunel Institute for Bioengineering
Brunel University
Uxbridge
Middlesex UB8 3PH
Tel/fax 01895 811401
Price *£29.38 inc. VAT*

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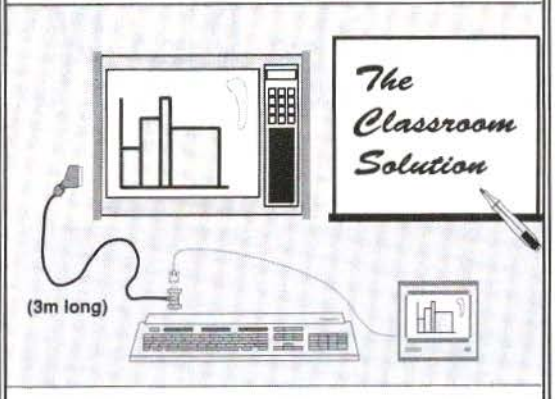
FOR THE CLASSROOM



A complete and inexpensive range of cables is now available - designed in association with Acorn Computers Ltd - to allow any Acorn computer and monitor to be connected to a classroom TV.

Classroom demonstration software (such as ***Autograph***) ideally needs a large screen. Many classrooms already have a TV for video playback, and most TVs now have a SCART connection at the back: this gives a **bright, crisp image** using the R•G•B signals directly - and you can write on the screen with a white-board marker pen.

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computer - teacher's monitor - TV

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TYPE 3:	9-pin to medium res. monitor	£16

○ 3m TV connection only:

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TYPE 5:	9-pin (eg A3000) to TV only	£12

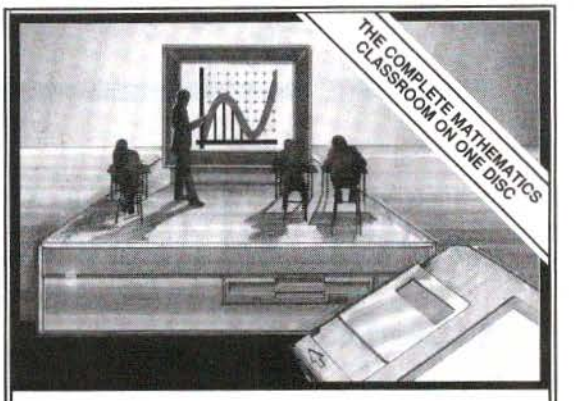
Type 5 may not work with some TVs - use:

TYPE 6:	Acorn "Active Scart" lead [1.5m] + 9-pin extension lead	£39

Further details *(requisition orders accepted)*:

EASTMOND PUBLISHING Ltd,
33 West Street, Oundle,
Peterborough PE8 4EJ, UK

Tel: 0832-273444 *Fax:*. 0832-272760
Contact: Douglas Butler



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Contact: Douglas Butler

Colour Graduated Text on the Risc PC

By Lee Calcraft

Figure 1. Colour blending tricks on the Risc PC

Have you ever seen the very tasty TV captions which use a graduated colour fill for the main body colour of the font, and wondered how it could be done? Well, if you have a Risc PC you can actually achieve the effect in real time without having to carry out graduated fills on each letter in turn.

Figure 2. Creating the 3D effect

The way to do it (revealed exclusively here!) is to write the font many times in succession at the same position on screen, but using a graphics window which is progressively lowered with each redraw. By changing the font colour with each redraw, we can achieve the desired effect. And since we are in complete control of the font colour, we can make it change in any way that we want.

A further important advantage of this approach is that in spite of the colour changes, we have full anti-aliasing at every point on the text, ensuring the smoothest of curves. If we had used a filling technique, the anti-aliasing would have been completely lost.

Running the Program

Probably the best way to see how this works is to take a look at the accompanying program. If you type it in and run it on a Risc PC it should create the screen shown in figure 1. In spite of the fact that it draws the string in 60-point Homerton around 300 times in all, the program takes around five seconds to run. Putting up a single caption will thus take about a second, which is a bit slow for a desktop redraw routine. So if you want to use the technique on the desktop, you could either reduce the number of colour steps, or save it to a sprite, which can then be redrawn very much more quickly.

If when you run the program it takes a lot longer than five seconds or the text looks a little ragged, you need to adjust the *Anti-alias up to* setting. To do this, double-click on !Boot in the root directory of your hard disc, select *Fonts* from the dialogue box, and increase the value of *Anti-alias up to* to at least 60.

How it works

From figure 1 you will notice that the text is also in 3D. This is achieved by the procedure PROCshadow, which draws the text ten times in a colour 50 units darker than the background at a series of positions which approach the position that will be used for the final text. Figure 2 shows the shadowing on its own. You will note that it is streaked. This is caused by the variation in colour of the anti-aliased pixels at the edge of each letter, and although it cannot be avoided, it creates a not unpleasing metallic effect.

The early lines of the program set up the mode, the string to be written (*string$*) and the background colour. The variables *br*, *bg* and *bb* hold the red, green and blue components respectively, and can range in value from 0 to 255, though you should not use a value less than the shadow level of 50.

After calling SWI "Font_FindFont" to establish 60 point Homerton bold, we then simply call the main procedure PROCgraduate four times to write up the text, and it is here that the trick is performed. PROCshadow is called, and then there is a FOR loop which cycles through the colour bands of the font. With each iteration the graphics window is lowered (using VDU24), and then one of the four font colour selections are made, depending on the value of the variable *type*. Essentially these set a colour value based on the value of the loop variable *c*.

The case of the purple-white-blue transition is a little more complex because three colours are involved, and we have doubled up on *c* to increase the rate of colour transition.

It should be possible to produce other effects by playing with PROCgraduate, but note that in order to keep the program simple I have based the routines on the chosen font size. This means that if you want to use a much larger or a much smaller font you will need to alter the way in which the graphics window changes with *c*, etc.

```
   10 REM Program     Graduated Fonts
   20 REM Version     A 1.00
   30 REM Author      Lee Calcraft
   40 REM RISC User   Jan/Feb 1995
   50 REM Copyright   Lee Calcraft
   60 REM Not Public Domain
   70 :
   80 ON ERROR:OSCLI("set DeskEdit$ERL "
+STR$(ERL)):PRINT TAB(0,0);REPORT$;" at line
";ERL:END
   90 :
  100 MODE "X800,Y600,C32K,EX1,EY1"
  110 string$="Colour blending"
  120 br=160:bg=120:bb=140 :REM Bcgnd co lr
  130 GCOL 128,br,bg,bb:CLG:OFF
  140 SYS "Font_FindFont",,"Homerton.Bol
d",60*16,60*16 TO font
  150 :
  160 FOR j=0 TO 3
  170     PROCgraduate(string$,100,900-200* j,j)
  180 NEXT
  190 END
  200 :
  210 DEF PROCgraduate(string$,x,y,type)
  220 LOCAL c
  230 PROCshadow(string$,x,y,50)
  240 FOR c=255 TO 0 STEP -4
  250 VDU24,0;0;1598;y-10+c/2;
  260 CASE type OF
  270     WHEN 0:REM Blue to white
  280     PROCfont_colour(1,255-c,255-c,25
5,br,bg,bb)
  290     WHEN 1:REM Yellow to Red
  300     PROCfont_colour(1,255,c+(255-c)/
5,0,br,bg,bb)
  310     WHEN 2:REM Green to white
  320     PROCfont_colour(1,255-c,255,255-
c,br,bg,bb)
  330     WHEN 3:REM Purple-White-Blue
  340     IF 2*c>255 THEN
  350     PROCfont_colour(1,255,512-2*c,2
55,br,bg,bb)
  360     ELSE
  370     PROCfont_colour(1,2*c,2*c,255,b r,bg,bb)
  380     ENDIF
  390     ENDCASE
  400     PROCwrite(string$,font,1,x,y)
  410 NEXT
  420 VDU26
  430 ENDPROC
  440 :
  450 DEF PROCshadow(string$,x,y,s)
  460 LOCAL i
  470 PROCfont_colour(1,br-s,bg-s,bb-s,b r,bg,bb)
  480 FOR i=9 TO 0 STEP -1
  490     PROCwrite(string$,font,1,x+i,y-i)
  500 NEXT
  510 ENDPROC
  520 :
  530 DEF PROCwrite(text$,font,col,X,Y)
  540 SYS "Font_SetFont",font
  550 SYS "Font_SetFontColours",,,col,14
  560 SYS "Font_Paint",,text$,20,X,Y
  570 ENDPROC
  580 :
  590 DEF PROCfont_colour(n,r1,g1,b1,r0, g0,b0)
  600 bgnd%=FNconvert24(r0,g0,b0)
  610 fgnd%=FNconvert24(r1,g1,b1)
  620 SYS"Font_SetPalette",,,n,14,bgnd%,
fgnd%,&65757254
  630 ENDPROC
  640 :
  650 DEF FNconvert24(r,g,b)
  660 =(r<<8) + (g<<16) + (b<<24)
```

DTP Workshop - Font Facts

Welcome to a new series which aims to explore one particular aspect of desktop publishing each month. This month, Richard Hallas takes a basic look at fonts and font organisers

The topic of fonts and typography is a closed book to a lot of computer users. Many people feel that there is an unnecessarily bewildering array of typefaces available, and a large number of them appear almost identical. Why should so many fonts exist? Are they really necessary? And when you've got them, how do you organise them?

A Myriad Names with a Plethora of Styles

One of the unfortunate things about owning an Acorn computer has until recently been the fact that 'mainstream' fonts have not been available in Acorn format. The Electronic Font Foundry has done lots of work over the years in producing fonts for Acorn systems, creating both new styles of its own and new Acorn versions of existing faces; but due to legal restrictions, the names of the EFF versions have to be changed from their PostScript equivalents on other systems.

The changing of names also extends to the fonts built into RISC OS: whilst Acorn users refer to Trinity, Homerton and Corpus, the rest of the world talks about Times, Helvetica and Courier. Greater standardisation is on the way, though: the Font Company, a new venture, is now supplying many faces with their standard names under licence from suppliers such as Monotype, Letraset and so on, with others to follow. These fonts use the original data rather than being redesigned on the Acorn system, and so they will have originated from professional typographers. With its recent successes in the field of publishing in Germany and elsewhere, Acorn is no longer such a strange name in professional circles, and font companies from the other platforms are becoming more interested in Acorn machines.

Common to all fields of printing, electronic or otherwise, are the fonts Times, Helvetica and Courier. These are, in fact, the three most basic ones which all PostScript printers contain, and they provide a core set of styles. Courier, the least visually pleasing of the three, is mono-spaced (meaning all the characters are of the same width) and looks like the output from an average typewriter. It can be useful in certain situations, such as, for example, producing tables and lists; but for general use it isn't particularly recommended when there are proportionally-spaced alternatives available.

Times and Helvetica are really the 'base' typefaces against which all others are judged. They are recognised by typographers as being extremely well designed and highly legible, generally well-suited to all kinds of different purposes. Their universal availability, though, has led to over-use, and the faces are seen nowadays as being distinctly old-hat, entirely lacking in character.

Times is, of course, a serif font, whilst Helvetica is sans-serif. Serif faces contain little finishing strokes at the ends of characters which have the effect of guiding the reader's eye along the line of text (see figure 1). The effect is very subtle, but it does

Figure 1.
The difference between a serif (left) and a sans serif font.

allow you to read long passages easily without your eyes getting tired. Sans-serif fonts are a relatively recent development in the printing world: although they have existed since the earlier half of the nineteenth century, they have only been in common use since the beginning of the twentieth century. In fact, the first modern sans-serif font to come into general use was the one designed for the London Underground in 1916. Sans-serif fonts, as their name implies, lack the little finishing strokes which guide the eye, and are consequently less easy to read over long passages. Nevertheless, their simpler letter shapes can give a very clean and open appearance to a page; text set in sans-serif can seem more friendly and inviting than it would if set in an imposing serif font.

A vast range of other typefaces is available for purchase and, historically, a good many of them were designed for a specific publication (Times New Roman was designed for The Times newspaper in 1932 and used for 40 years, to be replaced in 1972 by Times Europa and then Times Millennium in 1993). However, the three standard fonts together form a basic set of letters and symbols in contrasting styles (see

figure 2), and you may wonder initially why you really need any other fonts. There are many possible answers to this, but they fall into the two basic categories of the practical and the aesthetic.

Figure 2.
A few examples of styles and weights from the standard Acorn fonts.

'Fontmania' and other Ailments

From the purely practical point of view, you may need a style or weight which is not available in the core set of faces. Of the Acorn-standard font families mentioned above, none has more than the four weights of medium, italic, bold and bold italic. You may find, for instance, that you need to get text into a number of narrow columns on a page and, at a readable size, Trinity's letters may be too wide to get more than a few words per line in each one. This kind of situation can result in a number of problems, such as the production of excessive hyphenation and lines containing just one long word, or so-called 'rivers of white' where the spaces in consecutive lines of fully justified text become excessive and appear to run into one another (see figure 3). In this situation (without redesigning your document in a different way) you need a more condensed face, and you have the alternatives of either using a font which, in itself, has a naturally more condensed design or, alternatively, getting a condensed face for your existing font, which may or may not be possible.

From the aesthetic point of view, choosing fonts is like wine-tasting: once you really start to look at type rather than just reading it, you begin to notice (in the good quality faces, at least) the symmetry and balance of the design, how each letter has its own individual character but still fits harmoniously within the typeface as a whole. Every different typeface lends a different feel to the page: elegant or authoritative, jovial or serious, old-fashioned or modern. It's easy for the uninitiated to pass this kind of discussion off as either pretentious nonsense or pure pedantry, but it is

The topic of fonts and typography is a closed book to a lot of computer users. Many people feel that there is an unnecessarily bewildering array of typefaces available, and a large number of them appear almost identical. Why should so many fonts exist? Are they really necessary? And when you've got them, how do you organise them?

Figure 3.
'Rivers of white' - half close your eyes to see them more clearly.

neither: rather, it's surprising how much difference a typeface can make to a page. A revealing exercise is to write a letter in a single font, and then print it out a number of times, changing the basic font each time. The perceived tone of the letter can be altered to a surprising degree even before you actually begin to read the words!

The ability to choose fonts which are appropriate to the documents you create comes with experience and is very subjective. You do, however, need to get hold of a good range of fonts and use them for different tasks, rather than sticking resolutely to one or two families for everything you produce.

This is not to say that you should go overboard, however. Many professionals settle down to using a core set of families which they like and find to work well, venturing outside this range only for special occasions. Whether you have a large core set of favourites or a small one, the really important thing is that the documents you create are well-conceived and do not suffer from 'fontmania' (the over-use of several contrasting faces). Do not use your favourites all at once! It is good design practice to use only a small number of fonts within a single document. Obviously, the kind of document you produce will determine how many fonts this will be, but in general it won't be more than three families at the most, and you should be using only one for most of the text. You may have a fancier font for headings, for instance, or perhaps contrast the use of a serif body font by a sans-serif font in captions or text boxes. However, it is perfectly acceptable to use variant weights of a single family for all of these things.

This is one of the reasons why the basic set of three font families is inadequate. They do not provide enough weights to make for an interesting document in themselves, without combining with other fonts. Major headings, for instance, are often set in bold, but sub-headings may require an in-between weight like semi-bold. Body text should of course be set in regular, medium or book weights (whichever applies to the font you are using) with emphasised words or names appearing in the equivalent italic. It is not generally a good idea to use bold type for emphasis (unless you want to make a very strong point) as it tends to stand out excessively. Bold italic text is rarely useful, except for highlighting a piece of text within a line which is already emboldened, or for special purposes such as captions.

Then comes the question of condensed and expanded faces, both of which have their uses (although condensed is the more common and useful of the two). In modern DTP

packages it is all too easy to create pseudo-condensed faces by altering the aspect ratio of text. This can be very useful sometimes, but should be treated with extreme caution. Type designers often complain bitterly about how their carefully-designed faces are casually distorted and generally treated without respect by the ill-informed computer user in charge of DTP software. A computer-generated condensed face is simply not the same thing as a face which has been designed to be condensed. Real condensed weights have been carefully designed afresh, using the same principles as the family to which they belong, but with carefully altered stroke widths and proportions in the letters, along with other measures to ensure maximum quality and legibility. To a purist, use of computer-transformed text immediately shows up the work of a philistine!

For example, compare the two lines of Monotype Plantin Condensed Bold face in figure 4, and see how much nicer and more even the real condensed face is than the computer-generated version. Notice how the condensed bold face has similar vertical stroke widths to the untransformed bold face, but narrower open spaces between the verticals. The computer-transformed condensed face has lost some of its boldness because the vertical strokes are 20% narrower than they are in the normal bold face.

This is Plantin Condensed Bold (real Condensed face)
This is Plantin Condensed Bold (Bold face at 80% aspect ratio)
This is Plantin Bold (untransformed)

Figure 4.
The difference between a real condensed face and a transformed font.

The fundamental point is that, for a body-text font which you are going to put to serious use, you need a good range of weights and styles, and the basic set of four weights is often barely adequate. Computer-transformed faces provide a limited answer, but you should use properly designed versions of other weights if they exist. If you really get into producing good-looking documents, you are also likely to become interested in using expert sets, which contain old-style numerals, extra ligatures and small capitals (which are, again, vastly preferable to computer-generated ones).

A final point is that if you are looking for professional quality, you are unlikely to be satisfied with the vast majority of PD fonts. You should basically be looking to EFF or the Font Company. The latter company is now, for example, supplying for £1 each the exact same fonts that you would pay up to £70 each for on the Mac or PC, and has some very exciting projects in store for the near future. Doubtless EFF will also continue its sterling work in producing new good quality Acorn fonts. Both companies employ extensive quality control methods which you simply do not get with public domain offerings (even if they look good on the surface); and the latter can also have adverse effects on your system.

Getting Organised

As a tailpiece, anyone who is remotely interested in fonts should seriously consider installing a font management system. There are two main rivals: the original *Font Directory* from LOOKsystems and the newer *EasyFont3* from Fabis Computing. I reviewed Font Directory in RISC User 7:3, whilst EasyFont3 is new and will be reviewed shortly. Both programs basically perform the same function in that they replace the standard *!Fonts* application and store your fonts in a special (very large) file on disc. You can see a long list of your entire font collection in a window and group the fonts as you wish, and then make fonts of your choosing available or unavailable to other desktop applications, thus avoiding excessively long font menus. Both programs can scan files and install the fonts they contain. You need a hard disc drive to make proper use of these programs because they store all the fonts in one place, and you can only get a handful of fonts on a floppy disc.

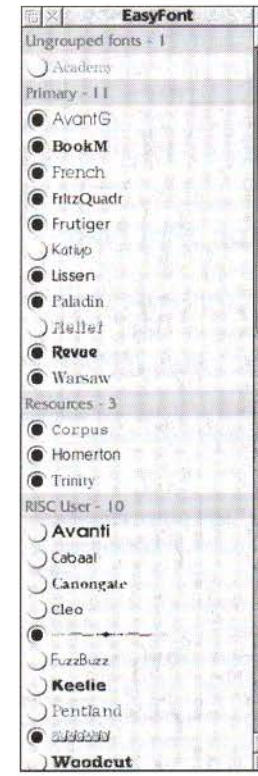


Figure 5.
Font management with EasyFont3.

EasyFont3 has one major advantage over Font Directory in that it allows you to create your own font styles, basing them on existing weights. There are lots of presets such as oblique, condensed, expanded and so on; or you can create your own new ones by specifying compression, expansion or shearing in both

Continued on page 27

An Introduction to C++ (Part 1)

Paul Field describes the benefits of the latest language to arrive on the Acorn platform

C++ is an extremely popular language on other platforms, and with the release of Easy C++ from Beebug and Acorn's C/C++, those of us who work on Acorn machines are finally getting the chance to find out what all the fuss is about.

Assuming that you happily code away in C, why would you want to change to C++? There are two reasons. You can use C++ as "a better C" and, far more importantly, C++ provides facilities for implementing object-oriented program designs.

In this article, we'll look at how C++ can be used as a better C. Part 2 next month will explain why object-oriented designs are a good idea and how C++ helps you to realise them.

C code is not C++ code

I'd better start by dispelling a popular misconception. C is not a subset of C++; they are different languages. They are, however, compatible. What this means in practice is that if you know what the incompatibilities are then you can write C programs that are also C++ programs. The incompatibilities that are most likely to bite are:

1) In C++ function prototypes are mandatory. However, you should use function prototypes in C anyway. They are a simple but effective way of catching bugs that might otherwise be very tricky to find.

2) C has different namespaces for object names and tag names. C++ has a single namespace for these identifiers, so:

```
struct s_tag{int i,j;}s_tag;
```

is legal C but illegal C++.

3) In C++ void pointers cannot be passed uncast to pointers of other types:

```
void fn(void *v)
{
  int *i = v; /* Illegal C++, should be: int *i =
(int *)v; */
  /*etc*/
}
```

4) enums are proper types in C++ rather than int synonyms, so you can't do this in C++:

```
enum tree { oak , elm, sycamore };
enum tree strange = 97;   /* Illegal C++ */
```

These incompatibilities might seem annoying at first glance but they exist because C++ insists on you doing things that help the compiler to catch bugs in your program. Now that's certainly a good thing!

Problems, problems

There are many places where C allows you (or sometimes forces you) to do dangerous things. By "dangerous" I mean things that are likely to introduce bugs which the compiler can't catch. We'll see a series of problems which are fraught with danger in C but can be safely dealt with in C++. As well as introducing some of C++'s features this will help you to understand why these features are useful.

Macros = efficiency + danger

It's quite common in C to turn small functions into macros for efficiency. For example:

```
#define ChangeCase(c) (islower(c)?toupper(c):tol
ower(c))
```

This can cause all sorts of problems because, although it looks like a function when you use it, *ChangeCase()* isn't one. Besides throwing away the safety that type checking on your arguments gives you, you've also opened yourself up to the problems of multiple evaluation. A 'call' such as:

```
ChangeCase(last_char(s));
```

becomes:

```
islower(last_char(s)) ? toupper(last_char(s)) :
tolower(last_char(s));
```

which will call *last_char(s)* twice. What was that about efficiency?

You're in even more trouble if your argument has side effects (e.g. *ChangeCase(a++);*). In this case *a* will be incremented twice even though it only appears to be incremented once. In other macros you're likely to run into undefined behaviour.

In C++ you can have all the advantages of a real function and still get macro-like efficiency by using the *inline* keyword:

```
inline char change_case(char c)
{ return islower(c) ? toupper(c) : tolower(c);
}
```

Warning: scanf() ahead

In C we often use *scanf()* and *printf()* for input and output. For example:

```
scanf("%d %f", &x, &y);
```

The problem here is remembering the "%" field codes, remembering to include all the variables in the argument list and, in the case of *scanf()* remembering to pass pointers to the objects.

In the Acorn world we're quite lucky because the Easy C and Acorn's Norcroft C compilers both check these things for us; some other compilers don't. However, if the format string is not given explicitly in the call, for example if it's read from an application's *Messages* file, then the compiler can't help and you're extremely likely to get it wrong.

C++ provides an elegant solution to I/O. This is the equivalent of the *scanf()* call above:

```
cin > x > y;
```

It means "from the input stream (cin) read x and then read y". The code to output x and y is equally stylish:

```
cout << x << y << '\n';
```

But how does the compiler know how to output x and y? They're different types. Well, the operators << and > are *overloaded*. This means that there are a number of definitions for the operators: one for int, one for double, one for strings and so on. The compiler chooses which of these to use based on the types of the operands (i.e. x and y in our example).

The real beauty comes when you create your own data types. You can add your own definitions of > and << for the data types you create and the compiler will use them when needed. So, in the above examples, x could be a date and y could be a complex number but the code remains the same.

Other operators can be overloaded. We could overload the + and * operators, making them apply to vectors and matrices, and write the following:

```
matrix m, m1;
vector v1,v2;
cin > m1 > v1 > v2;
m = m1*v1 + v2;
cout << m;
```

This is far more readable than the mass of function calls that would be needed in C.

Pointers everywhere

C code can be a mass of hieroglyphics at times but one useful feature of C++ can help here. Reference variables act just like ordinary variables except that they access another variable's storage. They are often used as an alternative to pointers so instead of:

```
void swap(int *a, int *b)
{ int tmp = *a;
  *a = *b;
  *b = tmp;
}
```

we can write:

```
void swap(int& a, int& b)
{ int tmp = a;
  a = b;
  b = tmp;
}
```

The code is neater and we don't have to remember to pass pointers when we use the function. In fact, the input operator > that you saw earlier uses references, so

```
cin > x > y;
```

can change x and y without you having to remember to pass pointers in.

General functions

The *swap()* function above can only be used on ints. Obviously *swap()* has far more potential than that but in C we would have to write separate functions for each type we were interested in:

```
void swap_int(int *a, int *b);
void swap_double(double *a, double *b);
/* etc. */
```

The first advantage of C++ is that, like the > and << operators we saw earlier, the function name *swap* can be overloaded and the appropriate version of the function will be called, based on the types of its arguments. This means we don't need to use and remember different function names. However, we would like to write a general function that can swap any type of object. Unfortunately, the only way to do this in C is to "throw away" type checking by using void pointers instead of "thing" pointers. So, *swap()* would become:

```
void swap(void *a, void *b, size_t size);
```

Notice that we have to pass the size of the objects in. Now we are just asking for errors: we are free to pass one type

into *a* and a different type into *b*, and we could easily get *size* wrong too. This sort of nastiness is necessary in C. There are examples in the C standard library (*qsort()* and *bsearch()*) and the Wimp libraries DeskLib and RISC_OSLib. However, C++ provides a technique to write general functions safely. You can write a function template that leaves some of the types unspecified:

```
template <class T>
void swap(T& a, T& b)
{ T tmp = a;
  a = b;
  b = tmp;
}
```

and when you use *swap()* the appropriate function for the types you are swapping is created. This is a lot safer than the C version because the compiler can check that the argument types match and there's no messing about with the size of objects either.

swap() is a trivial example. Templates really come into their own when you want to code containers (objects that contain other objects). If you need to be able to specify lists of "things", queues of "things" or trees of "things" then in C you can only get the necessary generality by using *void ** and sacrificing safety.

Conclusions

This article has hopefully shown you some of the problems of C and how C++ helps you to write clearer and safer code. There are many other advantages to using C++. Variable declarations can occur almost anywhere, functions can have default parameters, and a wide range of data types (strings, booleans, complex numbers, lists, vectors, sets) are built in or included in the C++ libraries (although, you might have to wait a while to see them; they are all new additions to the language). However, the biggest advantages come when you start using C++'s object-oriented facilities. To use them requires you to look at program design in a completely new way and that needs some effort on your part. We will look in outline at object-oriented design, and how C++ allows you to implement such a design, in the next article.

Paul Field is the Editor of CAUGers, the journal of the C Acorn User Group. For more information on CAUG and its parent organisation, the Association of C and C++ Users, write to him at 346 Chadwell Heath Lane, Chadwell Heath, Romford, Essex, RM6 4YH or email caugers@accu.org

DTP Workshop

(continued from page 24)

horizontal and vertical directions, together with letter spacing and offsets. You should of course bear in mind what I said earlier about the undesirability of transformed fonts. That is exactly what these are: transformed versions of existing faces. Thus the *SemiBold* button doesn't make a true semi-bold weight. Nevertheless, if you want these facilities, they are there and they work extremely well. *Oblique* is the most useful option, and is handy when a font lacks a true italic (or oblique) face of its own.

EasyFont has improved beyond all recognition since version 1, and is now a serious rival for Font Directory. I personally still prefer Font Directory because it is very efficient and offers finer control over font selection (e.g. you can select individual weights and non-contiguous groups of fonts for turning on and off); but if you want the pseudo weights, then you should choose EasyFont3 instead. A major new version of Font Directory is promised early next year, and it will be interesting to see what it has to offer.

Either way, you will find that access to your font collection is transformed by the system you choose. These font organisers are inexpensive and totally invaluable, and you really should get one of them if you have more than a tiny number of fonts.

Product *Monotype, URW, Letraset and ITC fonts*
Supplier *The Font Company*
47 Goodhale Road
Bowthorpe
Norwich NR5 9AY
Tel. 01603 748253
Fax 01603 740203

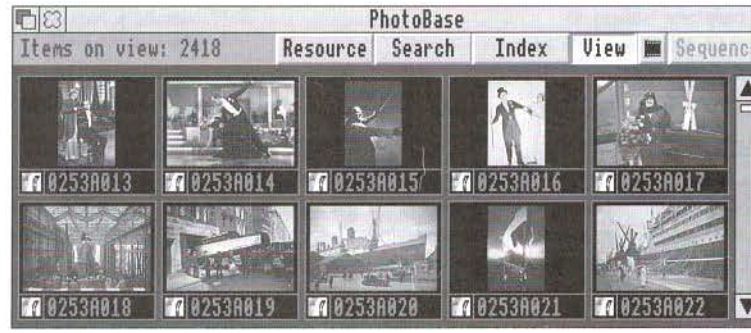
Product *EFF fonts and licensed PostScript fonts*
Supplier *The Electronic Font Foundry*
The Studio
Gibbs House
Ascot SL5 7NT
Tel. 01344 891355
Fax 01344 891366

Product *Font Directory*
Supplier *LOOKsystems*
47 Goodhale Road
Bowthorpe
Norwich NR5 9AY
Tel. 01603 748253
Fax 01603 740203
Price *£35 inclusive*

Product *EasyFont3*
Supplier *Fabis Computing*
Sarford House
Swadlincote
Derbyshire DE11 9SL
Tel. 01283 552761
Price *£35 inclusive*

PhotoBase - The Decades

David Harper peruses the first three CD ROMs to be released in Logotron's epic series.



The PhotoBase application in use

Way back in May last year we reviewed Logotron's first PhotoBase release. Somewhat misleadingly called *Landscapes*, it contained more than 2000 pictures from the UK and abroad. The driving application, PhotoBase, provided a scrollable window of thumbnail images together with extensive searching facilities. Each picture was accompanied by a brief textual description, and searches could be made on any word from the description or from an extensive system of keywords.

The new Decades series of CD-ROMs owes much to the original concept. Each CD covers a single decade from the twenties to the sixties, and is supplied with the PhotoBase indexing software on the CD. Of the five promised discs, Logotron have completed the Thirties, Fifties and Sixties, and it is those that are reviewed here. The remaining two decades are just around the corner, as is a sixth disc entitled The Victorians.

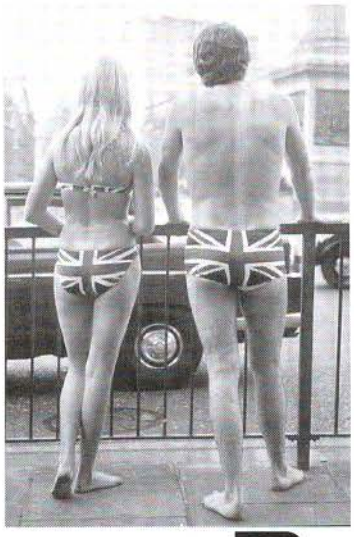
The controlling application, PhotoBase, has been upgraded in a number of ways since Landscapes was released, and in particular its search and indexing facilities have been extended. You can now search on both the leafname and date of a picture, as well as the keyword and textual searching of the earlier version. This is useful, as it means that you can isolate events that occurred within any given time span.

Another thing which I like about PhotoBase is the fact that it can give you instant access to the original image. Just double-click on any thumbnail image, and it appears at full screen size in around five seconds (on a double-speed drive). Alternatively if you double-click with Ctrl pressed it will load the image (stored as a 256-colour mode 28 sprite) directly into Paint, while double-clicking with Shift held down opens up the directory containing the image.

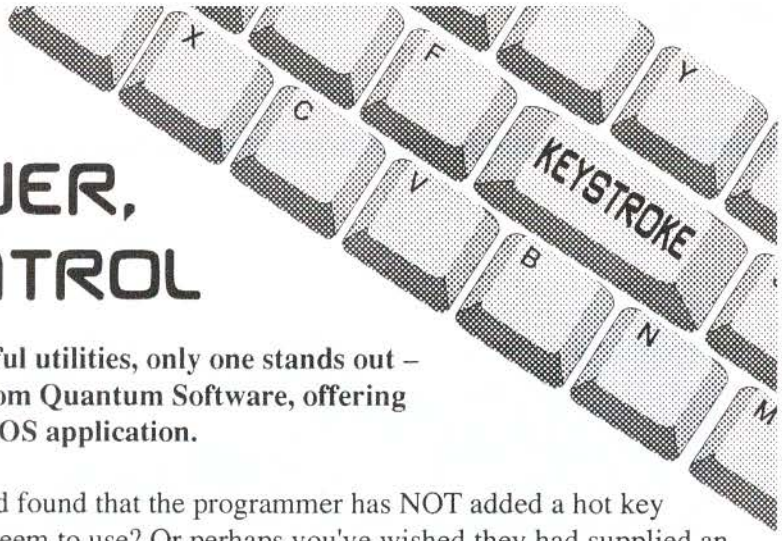
PhotoBase The Decades	
Supplier	**Longman Logotron** **124 Cambridge Science Park** **Milton Road** **Cambridge CB4 4ZS** **Tel. 01223 425 558** **Fax 01223 425 349**
Price	**£49.95 each ex. VAT.**

While the images on the Landscapes disc were supplied by amateur photographers and shot in colour, those for the Decades suite are all from the prestigious Hulton Deutsch collection of press photographs from around the world, and are mostly in black and white. From the millions of pictures held in this unique and very rich source, Logotron have extracted some 2,500 per decade in an attempt to represent the major events of each period. And generally speaking I feel that they have succeeded well in what was obviously a very difficult task. There are of course the odd omissions - such as the glaring absence in the Sixties collection of any picture relating to the assassination of either of the Kennedys, apart from one of a British newspaper stand (giving further credibility to the Conspiracy theory!).

Notwithstanding, these collections give a real feel for the periods on which they focus, and represent an invaluable resource. Coming from Logotron, they are aimed chiefly at schools, and their use is limited to non-commercial distribution at the purchase site, but they will nevertheless be popular in many other spheres. The picture and digitising quality are excellent, though the limited image resolution of around 500 x 350 pixels in 256 colours may prove to be too restricting for some purposes.



KYN 540



TOTAL POWER, TOTAL CONTROL

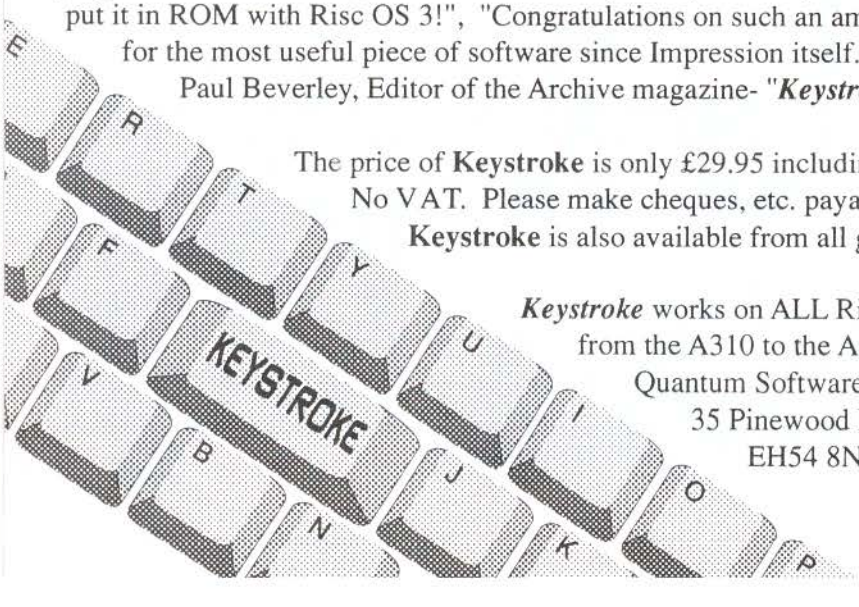
When it comes to genuinely useful utilities, only one stands out – the hugely popular *Keystroke* from Quantum Software, offering unrivalled power over any Risc OS application.

Have you ever used a program and found that the programmer has NOT added a hot key for that one function you always seem to use? Or perhaps you've wished they had supplied an icon to click on instead of those long complicated menus? Well, ***Keystroke*** is the answer you've been looking for because it can turn just about any desktop chore into a pleasure!

Keystroke is a unique 'macro' maker type program which transforms your computer into a really productive machine, saving you time and money! If you are serious about using your computer then you **need** to use a serious utility!

- **Keystroke** makes your desktop programs perform one or more of their functions in a sequence at the click of an mouse button or the press of a key!
- Gone are any repetitive, long complex series of menu selections, icon clicks, etc.
- Adding shortcut keys, autosaving features, text manipulation to any of your desktop applications is now possible!
- Latest version is fully compatible with all of Computer Concepts products!
- You'll be amazed at the real difference ***Keystroke*** makes to using your computer!

Here is just a few of the comments made by ***Keystroke*** owners...
"It's incredible, I'm never without it on my iconbar!", "Its easy to use and the most powerful program I've seen!", "***Keystroke*** has saved my sanity on many occasions!", "Acorn should have put it in ROM with Risc OS 3!", "Congratulations on such an amazing product", "Thank you for the most useful piece of software since Impression itself."
Paul Beverley, Editor of the Archive magazine- "***Keystroke*** is my right arm!"



The price of **Keystroke** is only £29.95 including postage and packaging. No VAT. Please make cheques, etc. payable to Quantum Software. **Keystroke** is also available from all good Acorn software dealers.

Keystroke works on ALL Risc OS (v2 to v3.5) machines from the A310 to the A5000, A4 & RiscPC.

Quantum Software,
35 Pinewood Park, Deans, Livingston,
EH54 8NN. Tel : 01506 - 411162

Comms - Unplugged

More than just a glossary, our Unplugged series gives you an in-depth explanation of some of the baffling jargon you may encounter. This month we de-mystify the process of going on line

Comms is short for communications. The term refers to the use of a computer to communicate with another computer usually at a different site. This normally involves establishing a link using a telephone line and a modem (see below), but it could also make use of other media such as a network or even a radio link. There are well established international protocols for communicating by computer, with the result that virtually any make of computer can talk to any other. Generally speaking you will need a comms package (such as Hearsay II on the Acorn platform), which will ensure that any data you want to send (text messages, files etc.) will be passed to the modem in the correct format for the chosen protocol, so that it will be understood at the other end. The process is largely transparent to the user, so you don't need to understand the protocols or the technical details to get on line.

Modem is a box of tricks that converts data from the computer to a series of audio tones that can be transmitted over any phone line. There are various specification standards for modems, characterised by unhelpful names such as *V.32* and *V.22 bis*. The most important element of the specification is the speed at which the modem transfers data - the faster the speed, the cheaper your phone bills, but the more expensive the modem. Also, the speed is dependent on the slower of the two modems in the link. Modem technology is advancing at a very rapid rate at the moment, giving rise to a confusing range of models on offer.

Cheapest nowadays are V.22 bis modems (2400 baud, or bits per second), which are suitable for light use provided you don't want to transfer large files. V.32 bis modems (14400 bps) are becoming very popular since they can transfer at a much higher rate. The next standard to hit the big time looks set to be V.34 (also known as V.Fast) which transfers at 28800 bps. Many of these modems have fax capability, which means that with the right software your computer can act as a fax machine. Also emerging now are voice modems, which can recognise voice as well as binary data, and can thus be used as the basis of an all-in-one telephone/fax/data system via the computer. There is no agreed standard yet for voice modems, so it's best to wait a little while if you're thinking of buying one. Watch out for announcements by the major modem manufacturers during 1995.

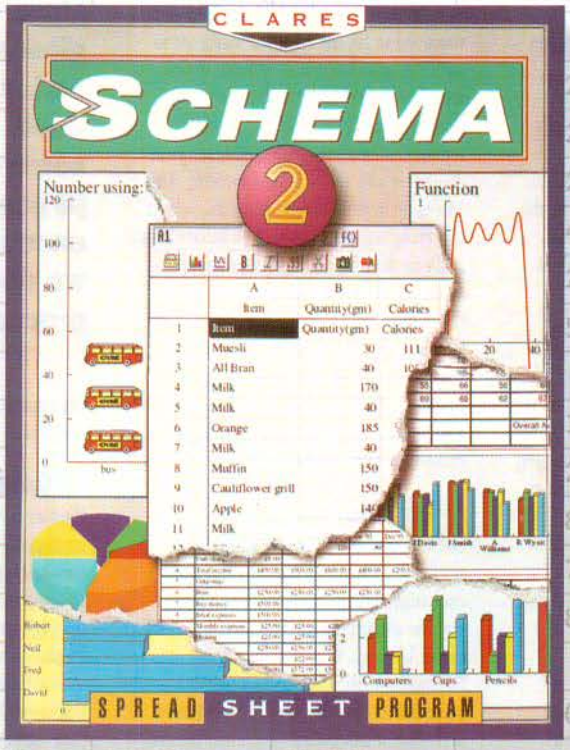
Internet is a global communications network which is available to anyone. This enables you to exchange messages and/or files with anyone else on the Internet, from the USA to the Ukraine. Our two-part series *Into the Internet* (RISC User 7:10 and 8:1) provided an introduction to the Internet and what it can do for you. Next month we will be starting an Internet column in RISC User. No doubt many more technical terms relating to the Net will be explained there, but do write in if there is anything you would like us to cover.

Information superhighway is a much-abused term that means anything and everything depending on your own personal agenda. Strictly speaking, it refers to the convergence of the computer, the telephone and the television to provide an integrated means of communicating information and edutainment. What this will mean in practice is anybody's guess, and you can be sure that it will eventually be shaped by politics and commercial interests. A taste of what is *possible* can be experienced in Acorn's new Online Media project (see RISC User 7:9). The Internet is not the information superhighway, though it could well play a role in it.

Terminal emulation refers to the way in which your computer can be configured to emulate a particular standard terminal type when displaying information received from a remote source. In the early days of comms, information services such as Prestel - which were initially accessed by a special terminal rather than a computer - displayed information in viewdata format (like the teletext pages on your television or a mode 7 screen on a BBC micro). This requires whole pages to be displayed at a time, with codes to set text colour and size etc. As computer access to online services became more popular, machines without the BBC micro's viewdata mode required a scrolling text display (which often has a name such as VT52 or VT100). Email services such as BT's Telecom Gold adopted this approach. Many bulletin boards stuck with the viewdata format, though often with a scrolling display as an option. There are often other terminal emulations available from your comms software, such as *Minitel* for accessing the French information system, *ANSI* for systems which adhere to the ANSI standard, and so on. If in doubt, try the options out until you find one that gives a sensible display - you can't harm your computer by doing so.

ZZZZZZZZ

Don't let your figures send you to sleep



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16 Bits - Now That Sounds Better!

Andrew Rawnsley checks out ESP's new Minnie 16-bit sound card for the Risc PC

When Acorn launched the Risc PC, one of the many tempting features was the ease and relative cost effectiveness of upgrades. Not only was the PC card to cost as little as £99, but various future processor upgrades were to be equally competitive. There was also talk of a cheap 16-bit sound system, but much of this evaporated as manufacturers kept their lips sealed. Now, many months later, ESP have released the *Minnie* 16-bit sound system at a cost well within most users' price range - a mere £70.

Cheap and Cheerful?

Some people might sneer at such an offer - after all, you get what you pay for, don't you? With other sound cards retailing at £200+, surely this is the poor man's alternative? Think again...

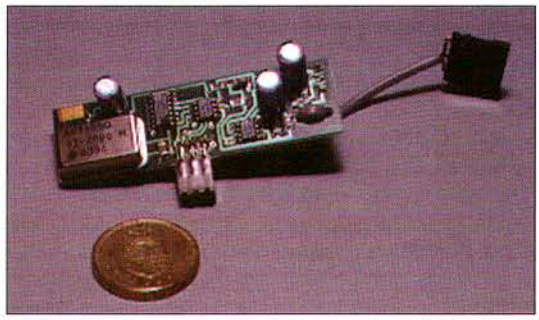
As well as controlling the Risc PC's graphics system, Acorn designed the VIDC 20 to drive the sound system. One of the initial targets for the machine was 16-bit linear sound as standard, but in order to keep costs down it was eventually decided to stick to the 8-bit logarithmic system used in older machines. But since the the VIDC 20 was designed with 16-bit capability in mind, a future upgrade was always on the cards right from the start.

Essentially, all the Minnie card does is to activate the dormant 16-bit capability. Despite its name, it does not come as a standard expansion card, but rather as a tiny circuit board which fits directly onto the Risc PC mother board, into connectors kindly supplied by the bods at Acorn.

This has the advantage of permitting superb CD quality output, and amplified volume, at a very attractive price. Naturally you don't get the 16-bit sampling and MIDI interfaces and software that other more expensive systems offer, but MIDI support is likely to be offered at a later date.

Value

If the card only offers 16-bit playback, is it worth buying in the first place? After all, if you can't get 16-bit samples into your machine what's the point? Well, since the VIDC 20 controls all the Risc PC's audio, the 16-bit upgrade will be used by all software producing audio, from games to multimedia. As a result, any audio output designed to make use of the higher quality will sound significantly better - CD quality in fact. Indeed, one person who heard the output commented that she wouldn't have known that the music wasn't being played from a CD if it hadn't been for the hum of my external hard disc's fan!



The Minnie card is aptly named!

I was slightly worried that older music files would sound worse than before due to the very poor 8-bit sampling. In a minority of cases - under 5% of my extensive music collection - these fears were borne out. It was largely files that were so poor I rarely played them anyway, but any crackle or distortion is likely to be magnified, sometimes to the point of unpleasantness.

Software Support

Software support for the card comes in three forms. Firstly, there is a new version of SoundDMA, the module which controls desktop audio. This allows compatibility with old software running on your machine such as games and music software. Secondly, a new set of sound modules is included for use with Acorn Replay to give 16-bit playback of suitable movies. Finally, there is a an attractive sound sample player, blessed with a highly inventive name, *Player*.

This offers playback of a wide variety of samples in different formats. If a format is unrecognised, you can select how you want the data to be played from an extensive options dialogue box. Perhaps the best use of this application is for playing Replay sound-only files as supplied on the Risc PC hard disc, or on Acorn's Replay Videoclip 1 CD. Although many have only been

sampled at 8-bit quality, they all sound much better under the new system, and the Overture to the Barber of Seville supplied on the CD in 16 bits is wonderful! A selection of 16-bit samples is included to demonstrate the quality of the system, and can be easily played back with Player.

External Hardware

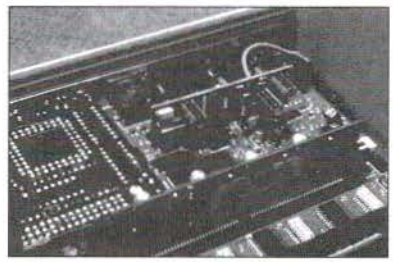
Although 16-bit sound can be played through the internal speaker thanks to the VIDC 20 and SoundDMA, a set of external speakers comes in very handy once you begin to get serious about sound. How can you experience true stereo sound out of the single tiny internal speaker?

Any speakers you decide to use with your computer should have a 3.5mm jack plug for connection to the machine. This is a standard connector used in most portable CD players, many hi-fi systems and almost all walkman players. It can pay to see what's available in local electrical shops rather than looking through computer magazines - you tend to pay through the nose with the latter due to the specialised market. A high street store is likely to have some suitable active loudspeakers (i.e. with a built-in amplifier) for between £20 and £35. You are also likely to require an AC mains adapter unless you have a large supply of batteries!

Future Extensions

Perhaps one of the most exciting aspects of the Minnie audio card is its future. By virtue of its price and Acorn's explicit support for the product, the card is set to become the standard 16-bit upgrade for the Risc PC. For this reason, a special driver is being written for use with the PC card (when released!) which will provide full SoundBlaster 16 compatibility. For those unfamiliar with this product, it is generally accepted as offering the best price/performance ratio on the PC. Indeed, the SoundBlaster range has been the cornerstone of the American company Creative Labs' success. It is now established as the standard in the PC marketplace, so we will be able to enjoy the huge range of multimedia and leisure titles written for use with the card. I, for one, can't wait!

As I mentioned above, a MIDI system is being written for use with the card, which will probably be released with the SoundBlaster driver and form part of an upgrade likely to cost in the region of £30-£50. This will bring general MIDI compatibility to the desktop - no need for sound cards costing £350 for quality MIDI output. However, you should bear in mind that these cards often have around 6Mb of samples on ROM. The ESP midi software for the card would have to store all its samples in RAM, so it's likely that 8Mb will be the recommended minimum, though a 4Mb machine may just about cope if the system is designed with this in mind. However, it's hard to tell at this stage.



The card in position inside the Risc PC

A Potential Problem?

Acorn have recently released a version of the Risc PC with an internal CD drive. These use a special audio mixer which allows the output from audio CDs to be played through the internal speaker (and hence the headphone socket so that only one set of speakers is needed). Other internal drives have similar facilities to connect their audio output in the same way. Unfortunately the connection utilises one of the sets of pins required by the Minnie card, so at present you can't use both together.

The Cumana drive supplied with the Risc PC has an audio socket on the front, so with this drive it isn't too much of a problem. But it isn't an ideal situation, and with other drives you may be thwarted completely if you want to play audio CDs through the system. I spoke to Andy Pierson of ESP, who said that an upgraded Minnie card is likely to be offered shortly which will solve the problem. I suggest contacting ESP for availability if necessary - a cheap upgrade will appear in due course for existing owners, so early purchasers needn't worry.

Conclusions

As you may have guessed, I find it hard to fault this product, except for the quality of output with inferior 8-bit samples. However, this is a minimal price to pay for the vibrant colour of sound achieved at such a small cost. Indeed, I would recommend the upgrade to almost all Risc PC owners. We now have a sound system worthy of such a machine. 24-bit graphics, 32-bit Risc architecture, and now 16-bit sound make the Risc PC more than capable of almost any task, from multimedia and full motion video, to DTP, to arcade quality games..... more than can be said for some systems!

I have one final thing to say - with the upgrade so cost-effective, maybe the next range of Risc PCs (RPC 700?) should have this functionality as standard. Any offers Acorn?

Minnie 16-bit Sound Card

Supplier	**ESP**
	Holly Tree Cottage
	Main Street
	Strelley Village
	Nottingham NG8 6PD
	Tel/fax 0602 295019
Price	**£69.95 ex. VAT**

DeskEdit 4

One of the most powerful and widely-used program editors for the Acorn platform

Whether you are programming in Basic or in C, DeskEdit 4 provides a massive range of features to assist both beginner and advanced users alike.

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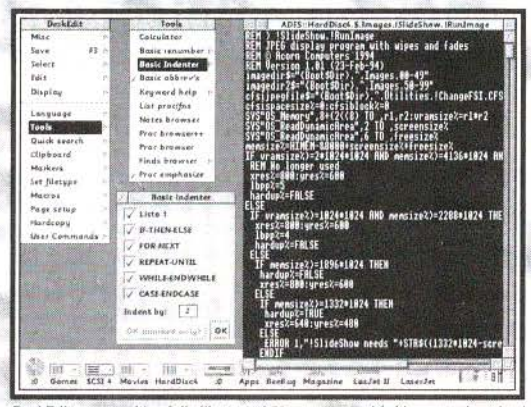

DeskEdit comes with a fully illustrated 70 page manual (with comprehensive index), a function keystrip and a smart quick reference card - together with a Desktop Dustbin, and Acorn's multi-file Find application.

Code: PDE4 DeskEdit 4	Code: PDEO DeskEdit Upgrade from 1/2 to 4	Code: PDEU DeskEdit Upgrade from 3 to 4
£22.94 plus £1.70 p&p + VAT (member)	£6.00 plus £0.85 p&p + VAT (member)	£6.00 plus £0.85 p&p + VAT (member)
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POINTS ARISING

Risc PC Column (RU 8:1)

There was a small error in the listing on page 45. Line 110 should not have been included at all, and the REM statement at the start of line 100 should be removed, so that the line now reads:

```
MODE "X800,Y600,C32K,EX1,EY1"
```

The version on the magazine disc was correct.

Wimp Topics (RU 8:2)

Unfortunately there was a small error in one of the listings accompanying this article. The end of the third line of *PROCstartprint* should read:

```
block%!40=&FFF
```

and not:

```
block%!44=&FFF
```

Also in one or two places in the listing you will see a variable *bk%*. This should be *block%*.

We apologise for these errors.

RISC User Binders

These strong B5 binders will hold 10 RISC User magazines together with an index.

The binders have the RISC User logo on the spine and cover, have a blue textured surface, they also come with self adhesive year date labels.

Code: 2421a
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Hands on Multimedia: Using CableNews II

Lee Calcraft puts Lindis' new software to the test

Lindis' CableNews presentation package has just reached version two, and to commemorate this I thought I'd put it through its paces. The package is designed for the creation of on-screen presentations, and although it shares common features with the likes of Magpie and Genesis, its emphasis is slightly different.

It is aimed at the production of linear sequences of full screen displays linked with customisable fades and dissolves, rather than as a complete desktop hypercard system. But the distinction has been blurred somewhat with version two, which can handle so-called hotspots. A hotspot is an area of the screen which is sensitive to mouse clicks, and by clicking on one of these you can skip directly to any other screen in the presentation, or even do such whacky things as load files or execute separate programs.

Version two also enables you to incorporate Replay files, so CableNews is beginning to look a bit like a multimedia authoring package, albeit one which is limited to full screen use.

Making and Viewing

There are two separate applications supplied with the package: CableMake and CableView. The first, as its name suggests, is used to create a series of individual screens (called *slides*), and to link them together. The second is used for playing the sequence, and requires a special licence if the presentation is to be distributed commercially.

Both applications operate on the contents of a special work directory which contains a set of sub-directories housing the text, image, movie and other resources associated with a particular set of slides. This approach avoids the duplication of resources for things such as background sprites, and thus saves considerably on disc space. The parent applications know which set of resources to use from the state of a system variable which is automatically set when the first resource is seen, or when subsequent work directories are double-clicked.

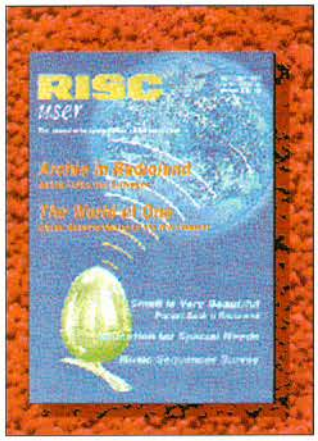


Figure 1.
Highly effective frame shadowing

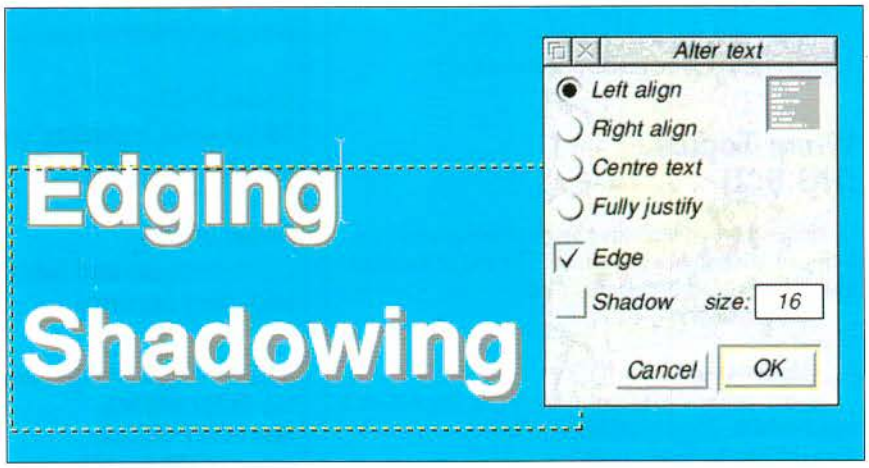


Figure 2. Two nice font effects - shadowing and edging

Practical Cable Making

So how does the package perform? To put it to the test, I set about producing a simple three-screen interactive featuring RISC User and associated products.

Starting up is simple: you just double-click on an empty set of work directories, then double-click on CableMake, and click on its icon bar icon. This brings up a window containing your first (empty) slide. All activities are then controlled from the slide's window menu.

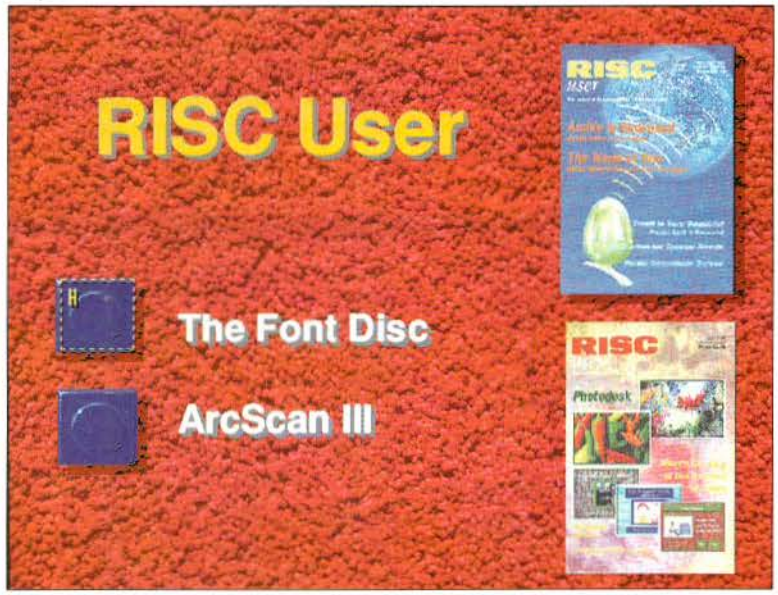


Figure 3. Completing the first frame

Background Information

The first thing to do with your empty slide is to create a background for it. This can either be a solid colour, or a sprite - either full-screen or tiled. I used a sprite containing a brightly coloured textured image. This was stored in the Background resources directory, and simply dragged to the background dialogue box. Beware though that sprites used with this package should not have a palette (at least, not if you are using a Risc PC), because there seems to be something awry with palette rendering on RISC OS 3.5.

Once your slide has a background you can start the design proper. As with all good page design systems CableNews is frame-based, and frames can contain either text, sprites, Draw files, Replay movies or hot spots. They can be invisible or solid, and have one of four different borders attached to them. They can also be given a shadow of varying depth. This is particularly well implemented, and is achieved by slightly darkening the colour of each pixel of the background where the shadow falls - see figure 1.

Figure 4. Linking the story together in the Story Editor

Into the Frame

To create a frame, just select the *New frame* option from the menu, and drag out the bounding box which appears. We will start by filling our first frame with a simple sprite - in this case the scan of a of RISC User cover. Dragging this to the frame loads and resizes it to fit the frame. If you drag out the

corners of the frame using Adjust, the image is automatically resized, though it is a little annoying that you can only pull out the bottom and right-hand edges of the box. Sprite resizing is performed quickly and without dithering, so if you want to get the best results, you are advised to supply images size-for-size. By dragging with Select, you can move the frame around the screen, though only the outline is dragged, and once you release it the whole window is redrawn relatively slowly (taking of the order of one second on a Risc PC - more if there is a lot on screen).

To put in some text you simply create a new frame, and start typing. You have full control over the font and size of type through the menu, and you can choose left, right or centre justification, as well as the foreground and background colour. The latter is important, since it is the colour to which the font is anti-aliased. It is also the colour used for two excellent effects: shadowing, and edging (see figure 2). These work on all the available fonts, and a high degree of anti-aliasing is maintained, ensuring nicely formed curves within the limits of the screen resolution selected.

Text Primitives

Unfortunately the text editing facilities are fairly primitive. You cannot move the caret around by pointing with the mouse, and the cursor keys do not work, so that editing is limited to the use of the delete key - a bit of a pain if there is any quantity of text. There is also no way to mix fonts within a frame. The redraw routines for this part of the software also leave a certain amount to be desired. If you delete a single character, the whole text is redrawn each time, and the code sometimes gets confused, and writes its text over other parts of the desktop.

But editing problems are considerably relieved by the implementation of OLE - *Object Linking and Embedding*. Just double-click with Ctrl held down on a frame containing text, and it will automatically be loaded into Edit or DeskEdit. You can then edit it as much as you wish, and when you save it out in the normal way from your text editor it will automatically replace the text in the CableNews frame. And this also applies to sprites and Draw files. Double-clicking with Ctrl loads them into Paint or Draw, or whatever.

Hot Spotting

Hot spots are active areas of the screen which can be made to respond to mouse clicks. They are created by taking a new frame, and selecting *Import* then *Hot spot* from the menu. If the frame already contains any object such as a sprite or even unsaved text, it is removed without warning. To create an active button, you need to put the button sprite (supplied in blue only with the package) into a frame, then create a hot spot frame of the same size, and place it over the top.

CableNews II

Supplier	**Lindis International Wood Farm, Linstead Magna, Halesworth, Suffolk IP19 0DU. Tel. 01986 785476 fax 01986 785460**
Price	**£149.00 ex. VAT**

If you need a number of buttons on your screen, you must create and resize each separately, since there is no *Copy frame* option. Alignment is also a bit awkward, though there is a grid option, and an optional readout of the mouse coordinates.

Having created the first screen of my three-screen demo, I saved it and moved on to the next two - see figure 3. These were much simpler, just containing a single sprite and a few words of text.

I then set about linking the slides into a story. A story is essentially a linear sequence of slides, but with the option of linking hot spots to particular slides via a system of labels. It works like this. You select *Edit story* from the icon bar menu, and the Story Editor window opens (see figure 4). You simply drag your completed slide files to this, and they appear in the story list. From here you can edit the time that each stays on screen in free running mode, and the type of dissolve used between each slide - though these are simply represented by numbers, so a good memory is called for. You can also establish labels for any of the slides at this point, and by entering the same name into the hot spot dialogue box, you can link any hot spot to any slide.

Having saved the story, you can test it out by running CableView. This has an extensive Preferences dialogue box which allows you to configure it in a variety of ways. It is here that you can choose to make the display interactive, effectively activating the hot spots, or alternatively it can be made to auto-run.

In spite of one or two hitches along the way, which Lindis are hoping to fix before too long, CableNews II is capable of creating very smart presentations and rolling displays - as seen for example at some of Acorn's product launches. Once you get the hang of the way things are organised this package is easy to use, though it would be nice if the text editor could be reworked.

Eureka 3

Alan Bonsor recalculates the latest version of Longman Logotron's popular spreadsheet

In the Spreadsheet Group Survey in RISC User 7:5 (April 1994), Alan Highet ranked Eureka 2 the weakest, by a tiny margin, of the four 'big' spreadsheets, the other three members of the family at that time being PipeDream 4, Schema 2 and Resultz. He praised it for its competitive price and macro language, but criticised its limited charting facilities and lack of background recalculation.

Longman Logotron has now released Eureka 3, sporting a substantial number of new features and improvements. Confusingly, Longman is calling it 'Eureka 3 for the Risc PC.' This is slightly misleading. When you purchase Eureka 3, you actually receive the Eureka 2 package with a sticker on the box declaring 'Includes Version 3 for the Risc PC 24 bit.' Opening up the box reveals the very substantial Eureka 2 ring-bound manual, a 15 page Eureka 3 supplement, an envelope containing the Eureka 2 disc and Example disc plus registration card, and a second envelope containing the Eureka 3 disc and another registration card. Two versions for the price of one? Well Eureka 3 has, according to the brochure, been 'expressly designed for Risc PC users.' However, it will run on any Acorn computer with at least (and it will be a squeeze) 2Mb RAM and RISC OS 3.1. If your system isn't up to spec (maybe you're still using RISC OS 2), you'll still be able to use version 2, and you won't have to send off for version 3 when you do upgrade your system.

As with almost all other Longman Logotron products, Eureka's documentation, packaging and presentation are of a very high standard. The manual is easy to read and follow and has a good index.

What's New

- Eureka 3 supports Object Linking and Embedding (OLE) with Impression Style and Publisher. This means that you can save a Eureka file directly into an Impression document. Should you later want to edit the worksheet, you simply need to press Ctrl and double-click on the worksheet inside the document. The worksheet will then automatically be loaded into Eureka. Closing the Eureka window after editing the worksheet will transparently update the version in the document.

- Direct support is provided for importing from and exporting to the two 'industry standard' spreadsheets - Microsoft Excel and Lotus 123 - on both the PC and Mac. Both Excel 3 and 4 formats are catered for, and there is limited support for Excel 5. On the Lotus side, .WKS and .WK1 files are handled.

- Eureka Charts, as well as Sprites, Draw files and ArtWorks images can be embedded anywhere in a worksheet.

- Background recalculation has been implemented, as well as an option to recalculate the worksheet automatically before saving or printing when *Automatic recalculation* is turned off.

- Header and Footer control is much improved: instead of there just being a *Header/Footer* writable icon in the *Page Setup* dialogue box, there is now a separate dialogue box in which headers and footers can be entered. The window allows you to specify the justification (left, centre or right), the margins and what Font style should be used for each.

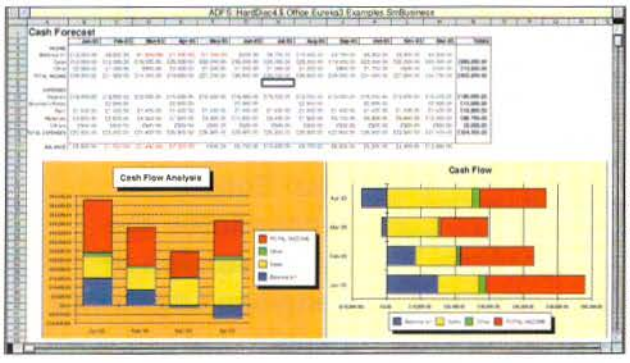
- Circular references between cells are now supported. This means that worksheets such as the following can be created and resolved:

	A	B
1	Gross sales	1000
2	Net sales	B1-B3
3	Commission	B2*10%

- The menu structure has been improved. The *Find*, *Replace*, *Goto*, *Series* and *Sort* options have been grouped together in a *Utilities* menu which replaces the *Data* menu. This is far more sensible than in the previous versions where options such as *Find and Replace* were sitting inside the *Formula* menu.

- Full support is provided for the printer manager's background printing facility. You can therefore continue working while your worksheet or chart is being printed.

- Many more options now have buttons on the toolbar. Eureka 2 only provided buttons for text

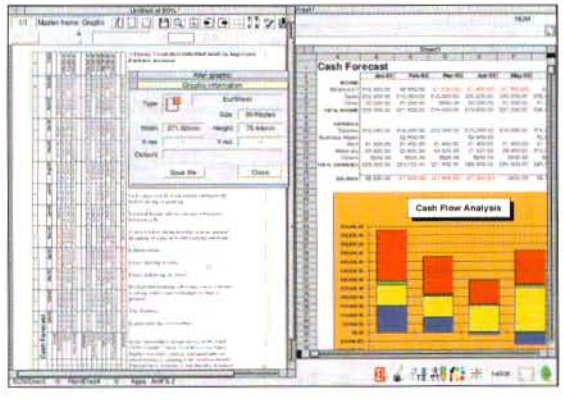


Eureka 3 charts can be placed inside your worksheet instead of being displayed in a separate window.

alignment, the SUM function and creating a graph. Version 3 sports three toolbars. Two of them relate to the worksheet itself: the first provides text and cell style buttons, while the second, accessed by clicking on the *Toolbar Rotate* button on the right hand side of the toolbar, provides *Save* and *Print*, *Cut and Paste*, *Fill*, *Grid display*, *Recalculate* and the *SUM* and *Graph* buttons. The third toolbar only appears when you create a graph in a separate window, and provides buttons for the six different graphs.

These are all excellent and valuable new features. Disappointingly however, the charting options have not been improved. They are more or less identical to Eureka 2 - i.e. functional but unexciting, and the only difference is that charts can now be embedded directly in the worksheet instead of merely being displayed in a separate window. Longman would do well to incorporate its PinPoint application's excellent charting facilities into a future version of Eureka.

I still have a few gripes about Eureka 3. Firstly, the Eureka 3 interface is not entirely RISC OS compliant. For example, you cannot always edit a worksheet when a persistent dialogue box is open. You can end up with a Eureka Chart window covering the entire desktop and you can't close it because somewhere, hidden away behind a dozen other windows, is a dialogue box which needs to be closed, or the toolbar which has gained and then lost the caret. I also dislike Eureka's pull-down menus - they are too much like the PC and Mac. And I do believe that its colour picker, although innovative and well implemented, should be replaced with the standard Acorn 24-bit Colour Picker. After all, this version is being sold as the '24 bit version'.



A Eureka worksheet embedded inside an Impression Style/Publisher document. Double-clicking with Ctrl pressed will load the worksheet straight back into Eureka.

There is also a fairly irritating bug in the program. If you change from a large screen mode to a smaller one, the toolbar and the title bar of the worksheet can disappear off the top of the screen. The only solution is to return to the previous mode.

However on doing this, the end of the toolbar which contains the *Rotate* button is cut off, and it's not possible to get this back without quitting and reloading Eureka. To be fair, this is more of a RISC OS 'feature' than a Eureka bug, but it is possible to prevent it happening.

And once again I have to ask, "Why is Acorn's Interactive Help not supported?" It is not difficult to implement, and makes applications far more accessible to the user. I do not want to have to refer to the manual to find out what a lightning bolt icon does (it actually causes the worksheet to be recalculated).

These problems aside, Eureka 3 is a good spreadsheet that will satisfy all but the most demanding users.

Product Eureka 3

Supplier	*Longman Logotron* *124 Cambridge* *Science Park* *Milton Road* *Cambridge CB4 4ZS* *Tel. 01223 425558* *Fax 01223 425349*
Price	*£119.85 inc. VAT* *£37.60 inc. VAT to upgrade from versions 1 or 2*

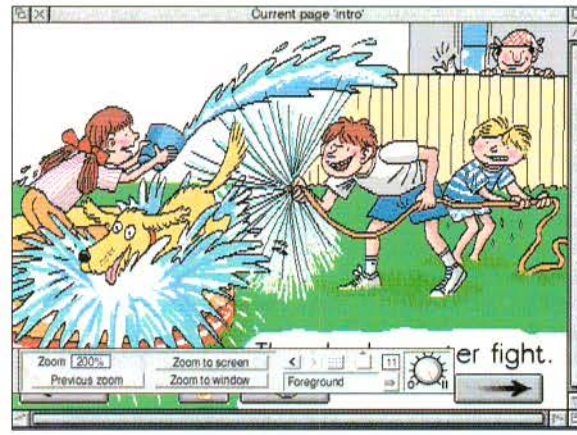
Education - BETTer by Far

Mark Sealey picks out the best items to be seen at this year's BETT exhibition

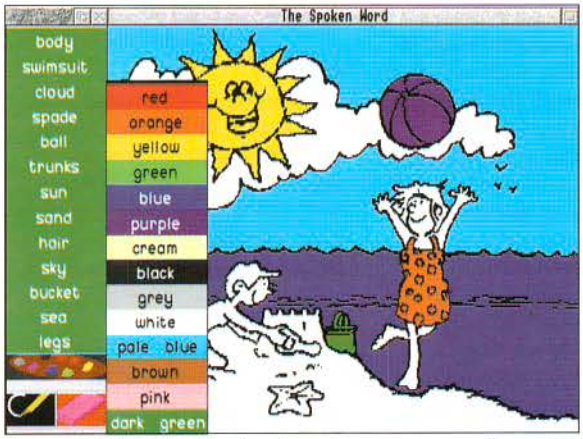
BETT is in its eleventh year. The main event of the year for IT in education promised to be bigger and better than ever; whether this has proved to be true or not, the show certainly has grown from the early days; an indication, to be sure, of the rapid and successful development of IT in education itself.

About 300 companies were due to exhibit and upwards of 16,000 visitors were expected. There was an ambitious and carefully planned seminar programme and a special feature organized and directed by the show sponsors, Educational Computing and Technology magazine, called Class Act 95 (see later). Not only this, but many software and hardware producers deliberately stack up releases for BETT. All this makes BETT an ideal day out of the classroom for the teacher as an efficient, cheap and effective way of keeping in touch with what's going on in IT (or if you're a parent or carer, to see what's relevant for your own kids).

As a result of production deadlines, this article had to be written before the show took place. So what follows is a summary only of some of the best and most exciting developments that were due to be seen at the show. It is not a definitive list - there is always much more on offer at BETT than can possibly be covered in an article, and I'm sure there will have been some last-minute surprises too.



Talking stories from Sherston



Wyddfa's *The Spoken Word*

Acorn

Acorn themselves will be exhibiting the latest additions to their Risc PC range - networking products, the 16-bit sound card (see the review in this issue), and the keenly-awaited PC card that failed to materialise at Acorn World. There will also be hands-on opportunities at the Acorn "Workbench", advice clinics and demonstrations, as well as the opportunity to obtain details of the extension to the Acorn Advantage scheme (see RISC User 8:1).

Acorn has ambitious plans, too, for remote communications; that will have been obvious to anyone attending the Acorn World exhibition in October. We have more news of these developments for you elsewhere in this issue, and those of you who have attended BETT will no doubt have been given a taste of what is just around the corner for the Internet - at the time of writing rumours are rife

about a full suite to access the World Wide Web and email.

The OnLine Media set top box will be used at the Acorn stand to display information about the show itself and hence to give a taste of how schools and colleges can benefit from this branch of the company's activities.

ANT

ANT, a collaboration between Atomwide and Aleph One to produce innovative networking resources, should have two products that are well worth seeing: Marcel is a mail-handling suite that can handle both internal mail around a school site regardless of the platform (it's called Marcel because of the MIME protocol for transmitting sound, music, video and rich text formats in addition to ASCII). The other major product under development is OmniClient, a networking suite that will allow Acorns to communicate and to share resources, files and printers etc. with other platforms, for example Apple, PC and UNIX.

Minerva

Readers from the South West of England may be very interested to hear about Minerva's Internet connectivity deals (see this month's News pages). Also launched recently by the company is a new version of Ancestry, and two completely new products: PrimeMover and Map Importer.

Sherston

Education stalwarts Sherston were due to launch the latest in their talking stories (Oxford Reading Tree Stage Two) and the All New Talking Animated Alphabet, a RISC OS reworking of the older BBC Animated Alphabet title.

HMTC

Hampshire Microtechnology Centre were expected to present details of their consultancy and training deals. Also due at BETT were the launch of a new version of the highly praised Exploring Nature CD-ROM as well as previews of CDs for the study of glaciation and physics, a considerable amount of new software for special needs and the full range of HMTC's curriculum material.

AVP

AVP were due to have examples on show from its rapidly growing PictureBase series, covering work in history, art and science. AVP is a company closely involved in the OILS project (see RISC User 8:2) so the company is one to watch if this development interests you.

CSH

Cambridgeshire Software House have a new security utility for hard disc drives called SecureIT. Individual files and directories can be made safe from wandering fingers at home and in school.

Widgit

Widgit has a respected range of software for special needs including the recently released The Writing Set, which is designed to help young users and those with literacy difficulties manipulate symbols and develop their use of language.

Northwest SEMERC

SEMERC have a huge range of products and services for pupils with special needs, and many of these will have been on show, in particular the new overlay keyboard Informatrix and overlay designer software Informax.

Wyddfa

Wyddfa is another company with software for young users and those with special needs. Their Talking Pictures and The Spoken Word are designed for children as young as three and those who need encouragement as they are beginning to read.

4Mation

4Mation have recently launched upgrades to some of their existing products, as well as a new CD, Guardians of the Greenwood, described as an "eco fantasy" for pupils in key stages 2 and 3.

Topologika

Topologika's latest product is Talking Clocks,

which is designed to help children tell the time with sound. This follows the pattern of the company's Talking Rhymes, which has been a huge success and which was due to have four new titles on show.

Clares

Clares should be showing a new version of Topographer, as well as a new program called Celebration which creates calendars, certificates and banners. Also relatively new is ProArtisan 24 for the Risc PC (reviewed in RISC User 7:8).

Others

Many other old favourites will have been at BETT, too, showing products of major interest to education, including RESOURCE with TalkWrite, Colton (Fireworkz Pro) and Cumana with its range of innovative CD drives and software.

Class Act '95

For the first time this year the organisers have planned an opportunity to escape from the hard sell into something a little more familiar to the classroom teacher.

The three main hardware manufacturers in the education market have planned to set up a model classroom with real children - in Acorn's case from two schools in Buckinghamshire and the Isle of

Wight. They will be showing what can actually be done with Acorn hardware on the Internet, with multimedia and using Pocket Books.

Pupils from the schools will be working over all four days on continuing projects that have been specially designed for the show. The whole feature, which has been overseen by Educational Computing and Technology magazine, is intended as a working showcase of what can be done. Staff from Acorn, the schools and ECT will be on hand to discuss the curriculum issues. This was expected to be quite a crowd-puller.

As I say, every year of an event like BETT is the "biggest and the best"; if you've yet to be part of the longest and happiest celebration of the British IT industry's commitment to education, then make a special effort next year to find out what all the fuss is about.

Welcome To My World

Chris Drage explores SEMERC's award-winning package which has a use for almost everyone

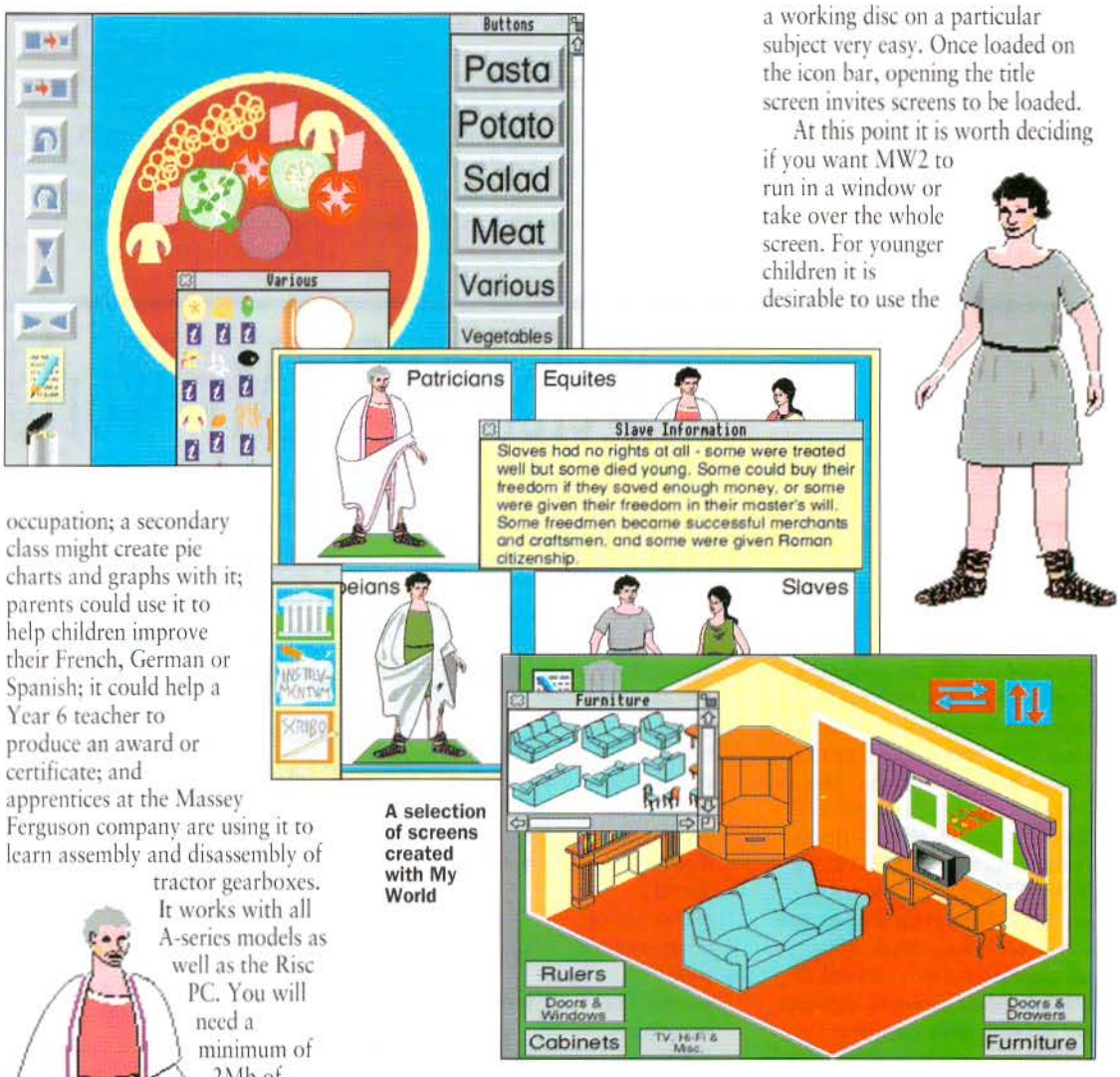
This year Northwest SEMERC received the Joseph Rowntree Foundation Readwell Award for "Best Software Producer". This achievement is even more significant when you consider the company's humble beginnings, and that this represents their fourth major award since 1990! Starting life as an LEA funded body, set up in the 1980s as part of the national network of Special Education Micro Electronic Resource Centres (SEMERCs), the N.W. SEMERC was expected to provide IT support for learners with special educational needs. It has subsequently not only survived all cuts and ridden economic hardships, but has gone from strength to strength in recent years. They must be doing something right! Undoubtedly, if one item of software has contributed to this success story, it must be the award winning My World and its ever growing range of support files. Yet, although My World has been around for a number of years, I am still amazed to find that many teachers and parents are unaware of this gem of a program. Those that do know it unequivocally sing its praises. For this reason I thought it worth devoting some space to the program this month.

My World is described as a "framework" program, which allows files created in Draw to be manipulated. Many IT centres have produced support packs on a plethora of subjects. Rather than describe all of these, the accompanying table picks out the best on offer under subject and age group headings. Of course, if none of these suit your needs then My World 2 allows you to design and use your own screens. For home users My World 2+2 represents good value for money. In addition to original material from the MW and MW 2 discs there are examples from some of the most popular support packs: Kitchen Designer, Dinosaurs, Town Planner, Board Games and Weather Maps. This pack also contains very good documentation.

Subject	Nursery/infants	Primary	Secondary
English	Alphabet, Cloze Reading, Early Phonics, I'm Special Me, Nursery, Visual Perception, Copy & Match, Fairy Tales, My Speech, Early Learning	Proof reading	
Maths	Maths, Copy & Match Early Learning Fun Graphs, Letters & Numbers Maths Park 1, Simple Money	Problem Solving, 100 Square, Graphs Pack 1, Let's Explore Area, Let's Explore Money, Measuring, Multiplication, Maths games, Pentangs, Pipes & Fittings, Tessellations, Times	Pentominoes, Tiling Generator, Graphs Pack 2,
Science	Dinosaurs, More Minibeasts, Skeletons, Trains,	The Garden	The Garden
History	Pirates & Seafarers,	Ancient Egypt, Romans In Britain, Viking Village,	World War2, Castles
Geography	Geog K.S.1. Junior Map Reader	Atlas Screens, Town & Village, Ashton, Islands, Road Signs,	Map reading Sense,
Tech.	Face IT, Drawing, Room Planner Design	CAD, Food, Kitchen Designer, Roman Mosaics,	Design a Castle, Design a Watch, Fashion,
Misc.	Christmas Disc,	Christmas ideas, Awards & rewards, Sports, Board games,	

There is a wide range of support packs for My World

How many times have you read a software blurb that claims that it "can be used from infants to adult level"? In my experience there are few titles that realistically achieve such a range in target audience. My World is the exception: a nursery teacher might use it to help young learners order and sequence events; my own Year 3 class will be using it to explore aspects of Roman



A selection of screens created with My World

occupation; a secondary class might create pie charts and graphs with it; parents could use it to help children improve their French, German or Spanish; it could help a Year 6 teacher to produce an award or certificate; and apprentices at the Massey Ferguson company are using it to learn assembly and disassembly of tractor gearboxes.

It works with all A-series models as well as the Risc PC. You will need a minimum of 2Mb of memory, and a printer is virtually obligatory with MW 2.

My World was originally conceived and developed by the Derbyshire Educational Support Centre for IT, and it is a tribute to its staff and their colleagues that they came up with a program which is simple in context but so useful at all levels. Although the original My World is still sold by SEMERC you should really only consider My World 2 as this has additional features and is more flexible to use. You can pick up objects, move them around on a variety of backdrops, put unwanted objects in the rubbish bin and add text if required. Work can be saved as a Draw file and/or printed. The whole aim has been to keep things simple. There is a program on the MW2 disc which makes setting up a working disc on a particular subject very easy. Once loaded on the icon bar, opening the title screen invites screens to be loaded.

At this point it is worth deciding if you want MW2 to run in a window or take over the whole screen. For younger children it is desirable to use the whole screen. Clicking Menu opens the directory of screens. Just clicking on one of these or dragging one onto the MW2 title screen or icon will start the program. Although different support packs may have different features, generally speaking you will be able to use buttons to rotate, resize or flip objects and to open pop-up windows containing libraries of objects (or other buttons) which could not be accommodated on a single screen. You can also use grid

Product: My World 2

Supplier	*N.W. SEMERC* *1 Broadbent Road* *Watersheddings* *Oldham OL1 4LB* *Tel. 0161 627 4469*
Price:	*£34.00 ex VAT* *£40.00 (My World2+2)* *£15-£24 My World support packs*

and 'magnetic-point' features which make it easy to arrange objects accurately. For younger users, undoubtedly the biggest improvement in MW2 is the facility to enable an object to be placed in close proximity to already placed objects then see it "click" neatly into position. There are enough screens on the examples disc to provide a good insight into the variety and extent of uses to which MW2 can be put.

Saving out completed screens as Draw files means they are available for use in all RISC OS compliant programs that accept them. For hard copy a colour printer will provide the best results, but do not be too discouraged if you only have mono. I found that some members of my Year 3 class were so motivated by using MW2 that when they had completed their Roman legionary or aquilifer they printed it out on the class BJ200 inkjet and proceeded to over-colour the grey shaded areas with coloured pencils! The result didn't look too bad either.

One of the aspects I like about MW2 is its Lego-like feature of being able to undo mistakes by simply selecting overlaying objects and moving them away (or dropping them in the bin), and then being able to re-adjust the incorrect object before replacing the removed items. The 'magnetic' feature is a boon here. Again, adding text is an important aspect from an educational point of view. Selecting the text icon opens a small window into which text can be input, edited and its attributes chosen (colour, size, font), a background colour selected and whether or not it is to appear in a box. Pressing Return places the text on the screen where it can positioned like any other object.

Whether you want to produce screens which can be used as visual aids in story telling at nursery school, or to demonstrate an elegant visual solution to Pythagoras' theorem, My World 2 is a program for all seasons and one which no computer used in an educational context can afford to be without!

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Pre-emptive Multitasking with TaskWindow

Thomas Down investigates a new method allowing programs to perform large amounts of processing without freezing the desktop.

Although the RISC OS multitasking system is good for programs which do not have to do processor intensive data processing, it has always been difficult to write programs which process large amounts of data in the background. Although in theory it is possible to make such pieces of code multitask by inserting calls to Wimp_Poll at suitable points, it can be difficult to make this work correctly in practice, particularly when it is necessary to modify code which has already been written to run in the foreground. What is really needed is a system which allows code written to run in the foreground to be multitasked automatically, by forcibly stopping it at regular intervals and allowing other programs to do their processing. This is the approach taken by OS/2 and Windows NT. Unfortunately, it does not appear as an obvious feature of current versions of RISC OS.

Fortunately, there is a relatively easy method of so-called pre-emptive multitasking which can be achieved by using new features of the RISC OS 3 TaskWindow module. This is the module which, together with Edit (and the latest versions of DeskEdit), provides the now familiar Ctrl-F12 task windows, but, by specifying the right parameters when issuing the **TaskWindow* command, it can execute a non-multitasking program in the background without opening a window. Better still, it provides an easy mechanism for two-way data transfer between the program being multitasked and the program which issued the original *TaskWindow* command, via a system of Wimp messages. The TaskWindow module itself is documented on page 3-321 of the RISC OS 3 PRM, with the definitions of the Wimp messages it understands on page 3-266.

We now have the possibility of a practical program which can do background processing. It will consist of a fully multitasking front end which provides a set of menus and dialogue boxes which allow the user to enter data and set up preferences. It may also provide windows for viewing or editing data. When the user starts an operation, a message is sent to a back end program being run as a background task by TaskWindow which performs the requested operation and then sends back a "completed" message, together with any output data.

It is possible for a single front end program to drive an almost unlimited number of back end programs allowing practical 'multithreading', where the program can perform more than one task at once. The back ends can be loaded when the application starts up and remain resident until it quits, or they can be loaded from disc when they are needed, and quit immediately after they have finished. The latter option can be very attractive if memory is limited. and represents a form of overlaying.

Starting a background task

A background task can be started by any program which has a Wimp_Poll loop. This is important because it will be necessary to send and receive Wimp messages. If you are writing a specifically RISC OS 3 program (i.e. you are passing a Wimp version number above 300), remember to specify all the messages you wish to receive, which will include the TaskWindow message described in this article, plus any other messages you require.

A background task is started using the *TaskWindow command as follows:

```
*TaskWindow <prog> -wimpslot <mem>K -name <task name> -quit -task <taskhand> -txt <id>
```

The parameters are described as follows:

prog	Pathname of the program to run in the background
mem	Amount of memory to allocate to the background task
taskname	The name by which the background task will be identified in the Task Display
taskhand	The task handle of the front end program
id	A (unique) identification number for the background task

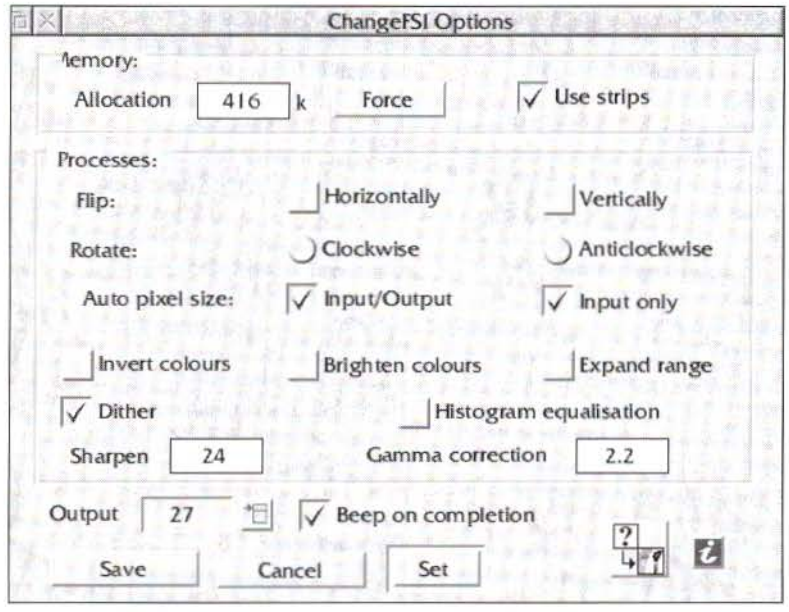
taskhand and *id* are given in hexidecimal and prefixed by an '&' symbol. If *taskname* is more than one word, it must be enclosed in quotes.

id is only important if you are starting more than one background task. However, it should still be specified, even if you are only starting one.

Once the background task is up and running, the front end will receive a message *TaskWindow_Ego* (action code &808C2). This will contain the back end's task handle, which must be recorded so that messages can be sent to it. TaskWindow messages must *never* be broadcast to all tasks, because there may be other programs using the module which you do not know about.

The message *TaskWindow_Ego* consists of a standard message header and the background task's *id* number. This is where *id* becomes important: if you have started several background tasks, referring to the *id* field allows you to decide which background task the task handle belongs to. The relevant fields of the message block are as follows:

R1+4 Background task's handle
R1+20 Background task's id number.



The ChangeFSI front end on this month's magazine disc

Background task structure

The background task should be a normal non-multitasking program. It can be written in almost any language, and the only real restriction is that it should not perform any VDU output except for data which is intended to be passed back to the front end (see below). When it first starts up, it can perform any necessary initialisation routines. Once these are complete, it should request text input by performing an INPUT (or equivalent) command, and wait for further instructions.

The exact communication system used between foreground and background tasks is not important. However, the messages should be alphanumeric, and as short as possible. If a large amount of data needs to be transferred, it should be sent via a scrap file on disc, or via PipeFS (see later).

Once the operation is complete, the background task should PRINT a suitable 'completed' message to the screen (this will not actually appear on the screen, but will be passed back to the foreground task). If the result is simple (i.e. a single number), then it can be included in the message. However, if a large amount of data needs to be transferred, such as a sprite from a graphical program, then the transfer must again be done via a scrap file. Having finished the job, the program should issue another INPUT statement.

Communicating with the background task

To give instructions to the background task, the front end must send a *TaskWindow_Input* message (&808C0). This message is structured as follows:

R1+0 Text length+24 (multiple of 4)
R1+20 Text length
R1+24... Text to be sent to background task

The text sent in this way is picked up by the background task's INPUT statement.

When the background task produces output (e.g. from a PRINT statement as described above), the foreground task will receive a *TaskWindow_Output* message (&808C1). This message is structured in exactly the same way as *TaskWindow_Input*. You must bear in mind, however, that there will not be a carriage return at the end of the string so you must use the length returned at R1+20 to determine the extent of the text.

If the front end is driving multiple background tasks and there is any doubt as to the origin of the message, this can be checked by comparing R1+4 with the values returned in the *TaskWindow_Ego* messages.

Unfortunately, not every *TaskWindow_Output* message received will be meaningful. The INPUT command echoes to the screen everything you type in, and when this is applied to a program running in the background, it means that the foreground task will receive a copy of each message it sends. The easiest way to get round this problem, at least in simple cases, is to use a 'messages received' counter, which is reset to 0 each time a *TaskWindow_Input* is sent, and then incremented when a *TaskWindow_Output* is received. This way, the first message received after one is sent can be ignored.

When the front end quits, it must kill all background tasks by sending a *TaskWindow_Morite* message (&808C4) to each one. This message contains no special data - simply receiving one is enough to make the background task exit immediately.

If, for any reason, the background task exits unexpectedly, it will send the front end a *TaskWindow_Morio* message (&808C3), which again does not have any message-specific data. On receiving this message, the front end must behave sensibly. The simplest solution would be to quit with an error. A rather more ambitious approach would be to attempt to reload the background task that has been lost, only exiting if this proves impossible.

The Example program

The magazine disc contains a simple example program, using the techniques described here. The foreground task provides a dialogue box on screen, allowing the user to enter data (in this case a number), and displays results, while the background task calculates square roots. Since the time taken for a single calculation is negligible, it is repeated 200,000 times, demonstrating conclusively that true background processing is taking place. Both programs are written in Basic and contain comments explaining some of the more practical points concerning the setting up of such a system.

Also on the disc is a front end for ChangeFSI. It allows the version of ChangeFSI on the RISC OS 3.1 support disc to be run in the background. The program, *ChangeBG*, is written in C, and source code is included. Details of how the program works can be found at the end of its *!Help* file.

Data transfer

One of the main problems with the systems described so far is the transfer of data between the background and foreground tasks. The TaskWindow messages are only suitable for textual messages of up to about 200 characters in length. For larger amounts of data, another system is necessary. The simplest approach is to use a temporary disc based scrap file for data transfer, and reserve the textual messages for telling other parts of the system when data is waiting for them.

This system is fine when the scrap file can be stored in a RAM disc or on a hard disc, but when it must be stored on floppy disc, it is likely to be slow and inefficient. Perhaps a better approach is to use the RISC OS 3 PipeFS module. This has been described in an earlier issue of RISC User (6:8), but basically it is a specialised RAM disc for transferring data between two programs. It is especially useful when transferring data to the background task, since if the background task tries to read data from the pipe which is not yet there, it is automatically suspended until new data has been written to the pipe.

Advanced techniques

As mentioned above, one foreground task can start an unlimited number of background tasks. If more than one task is being started at a time, each must be given its own id number. The numbering system used is unimportant, as long as each task has its own number. When a *Taskwindow_Ego* message is received, the program should check the id number to decide which background task the message refers to.

With a large number of background tasks running, even if only in a 'standby' mode awaiting instructions, the system can slow down noticeably. If this becomes a problem, a background task can be 'suspended', reducing its processor requirements significantly. To do this, send a background task a *TaskWindow_Suspend* message (&808C6). A suspended task can be reawakened by sending a *TaskWindow_Resume* message (&808C7). Neither of these messages requires any message-specific data.

On some occasions, you may wish to write a program which can be run either as a background or a foreground task. If at any time it becomes necessary to determine whether or not the program is running in the background, a simple SWI, "TaskWindow_TaskInfo", can be used. Currently, the result is only defined for an entry condition of R0=0. When this is the case, R0 will be non-zero on return if the program is running in the background. For example, from Basic:

```
SYS "TaskWindow_TaskInfo",0 TO state%
IF state%<>0 bground%=TRUE ELSE bground%=FALSE
```

will set the flag *bground%* according to the environment in which the program is running.

Planet Acorn

Around the world Acorn is working hard to establish new markets and consolidate existing ones. Alan Wrigley presents a round-up of the current worldwide scene - you may find some surprises!

Most Acorn users in the UK have a vague idea that the company is moderately strong in one or two other markets - Australia, New Zealand, South Africa and Germany come to mind straight away. In these countries Acorn has either had a presence for many years, or has recently targeted the country in a big way, as for example in Germany. But where else might you find enthusiastic Acorn owners? If I said Iceland, Japan, USA, the Philippines... would you believe me? Of course not! It just happens to be true...

Let's start with the Antipodes. The Risc PC is selling well there, and multimedia and networking are really big news. In fact networks are more common in Australia than in the UK. The Learning Curve is also selling well, and in New Zealand a deal has been struck with a retailer for a scheme similar to the Tesco schemes in the UK.

In Germany things are also looking quite good, and Acorn will hope to capitalise on this with a major presence at the CeBit exhibition in March. The collapse of Commodore has left a big hole to be filled - in fact, Acorn recently exhibited at a Commodore exhibition in Cologne with huge success. One of Germany's premier department store chains, Karstadt, is now selling Acorns instead of the Apples it used to sell. A new German-language magazine dedicated to the Risc PC is on the market. And apparently pigs go down well in adverts, so Acorn has developed a pig-oriented marketing campaign that has attracted a lot of attention. "Was geht schneller als eine gesengte Sau?" Answer: a Risc PC.

Acorns are now also being sold into Sweden via Germany, opening up yet another market we hope.

Other European countries which are proving worthwhile markets are France, Holland and Iceland. Holland has always been a strong market from the earliest days of the BBC micro - witness the success of the Big Ben Club over the years. The Risc PC has rejuvenated that market, and special needs products are also very much in demand. In France, Acorn has made moves into the retail market, and the Risc PC has attracted attention from the graphics industry - reviews in the graphics press have praised it highly. The French are also exporting A3010s to the Philippines for use as teletext terminals. And in Iceland, Acorns are popular with dentists, would you believe? A dental software package has been developed and is turning Icelandic dentists on to Acorn kit.

South Africa is potentially one of the biggest markets for Acorn in the world. Already its machines are heavily used in business, in contrast to the UK where Intel/Microsoft rule the roost (or Apple if you're into design and publishing). Graphic designers (such as the winner of Acorn's recent Christmas card competition) have used Acorns for years, and many other businesses have relied heavily on them, often writing their own software if the appropriate commercial package doesn't exist. With the recent political changes in South Africa, it's clear that the country will be one of the world's major growth areas, and if Acorn plays its cards right there could be rich pickings, particularly in education.

Finally, did I really mention Japan and the USA earlier? Indeed I did. The Japanese are very worried about the threat of world domination by Intel and Microsoft, and many well-known Japanese giants are looking for a technology to help maintain their position in the market. The ARM chip just happens to be the only viable option right now, and so it is making waves in Japan. The A4 in particular has attracted a lot of interest. It's early days yet, but I think we may hear a lot more about Acorn doing business in Japan in the future. And even in the USA, Microsoft's backyard itself, Acorn has something to cheer about. An experimental advert in Byte magazine drew a response from hundreds of people all wanting to know where they could buy one of these futuristic machines, while the electronics giant Sharp has bought a load of Risc PCs to help them develop a speech recognition chip using ARM technology.

With the growth of the Internet, Acorn could reap its own rewards from the global information exchange. The Internet is an ideal way to spread the word about a fast, powerful British computer that could just become a cult product - be different from your friends and own one of these super stylish Risc PCs. The Internet also makes it very much easier for customers outside Britain to buy machines (i.e. by mail order without the necessity for an expensive local dealer network), and to get after-sales support. As Hilda Ogden would have said, the world is Acorn's lobster.

Creating Relocatable Modules

by Lee Calcraft and Alan Wrigley

Several readers have remarked recently that we have not covered the techniques of creating modules for a long time now. Following the popularity of recent programs such as the CLI_SWI module (RISC User 7:9), we decided it was high time we rectified the situation. This article is based on Lee Calcraft's article on the same subject in RISC User 1:4.

Relocatable modules provide the programmer with a powerful means of implementing all manner of machine code applications and utilities in such a way that they appear to the user as if they were an integral part of the operating system. Indeed a great deal of RISC OS is constructed around this principle, except that the resident modules are in ROM and therefore fixed rather than relocatable.

There are many uses for modules. The two most obvious are to provide the system with SWI calls and star commands. Every time a program makes a SWI call, or the user types a command at the command line, the resulting action is performed by one module or another, whether it be the Window Manager or the Hourglass. You can easily add your own SWI calls and commands to the system by creating a module which recognises and acts on them (though there are certain rules you must follow to ensure your module doesn't conflict with another). Modules are also often used to provide support for a specific application, by performing tasks that are difficult for the application to do itself, such as trapping events and so on.

This article will explain how a simple module may be written. The accompanying listing creates a module which will respond to the two commands *Test* and *Dummy*, and to various *Help* calls. To create the module, first type in listing 1 carefully and save it as *TestSource*. When you run the program it will assemble and save (in the currently selected directory) a module called *TestModule*. Double-clicking on this will install the module. If you now go to the command line with F12 and type:

```
Help Modules
```

you should see the name *TestModule* followed by a version number and the date of assembly. To confirm that the module is working correctly you can now type *Test*. This should produce the following message accompanied by a beep:

```
The response to *Test
```

How it Works

To understand how a module works we must dissect the program. Line 90 dimensions 4K of memory in which to assemble the module code - for a real module you may need much more than this. Because the module must be relocatable it must be assembled as if its start address is zero, so we must use offset assembly - i.e. we set P% (the implied start address) to zero and O% to the actual location in memory where the code will be assembled.

The most crucial part of a module is its header, which has a clearly defined structure. This is situated at the very start of the module and contains pointers to all the relevant parts of the module. The header *must* contain at least 28 bytes, as follows:

Byte	Pointer to
0	Start code
4	Initialisation code
8	Finalisation code
12	Service call handler
16	Title string
20	Help string
24	Command table

Any of these pointers may be zero (except the title string) in which case that entry won't be used. All the pointers listed above are to an offset from the start of the module; i.e. if the title string offset is 32, then the module's title string starts at byte 32 of the module.

If your module is to respond to SWI calls then you need a further four words in the header. The first of these, at byte 28, is *not* a pointer but a value giving the base number of the SWI chunk (e.g. &400C0 for the Window Manager). The other three are as follows:

Byte	Pointer to
32	SWI handler code
36	SWI decoding table
40	SWI decoding code

Since we are not dealing with SWI calls in our example module we don't need to include these additional bytes in the header.

The seven obligatory elements of the header are defined as follows:

Start code: where to start up the module if it is an application. For a service module such as the one we are describing here this is not required.

Initialisation code: a routine which is executed when the module is installed, and sets up the environment the

module needs *before* any other calls are made to it. For example, if a module needs to claim workspace, or enable an event, it must do so here.

Finalisation code: called when the module terminates. It should release workspace, disable events etc. before quitting.

Service call handler: only necessary if the module needs to intercept service calls.

Title string: the name which will be displayed when the user issues the *Modules* command. It is obligatory to have a title string, which should be reasonably short.

Help string: a string which is displayed when the command *Help Modules* is issued. This should contain the module name and the version number and date, with tab characters after the name to ensure that the display is aligned with other modules in the machine.

Command table: a list of commands recognised by the module and the help strings associated with them.

Lines 160-220 of the listing set up the header for our test module. We don't need any of the first four entry points, so each of them is given a value of zero. The other entry points require offset pointers, as described above, and since the module will be assembled as if to start at address zero, all we need to specify for the pointers are the labels of the sections of code to which they should point, i.e. *title*, *help* and *command* respectively (lines 200-220).

The title string is just a string of characters (with no spaces) terminated by a zero byte. The help string works in a similar way, except that with this and all other strings in the module spaces are permitted. We can easily insert the date automatically at the time of assembly, since the recommended date format for the help string is the same as the format obtained from the TIME$ function (e.g. "06 Jan 1995"). Following the help string you should place an assembler ALIGN directive.

The Command Table

The command table consists of a set of five entries for each command recognised by the module. First of all you must place the command name in the table, followed by a zero byte and an ALIGN directive. as you can see, the name "Test" appears at the head of the command table (on line 380). The second command "Dummy" appears on line 460.

After the zero byte and ALIGN directive following each command name, there are four words. The first points to the code to be executed when the command is recognised, the second contains a set of flags (of which more in a moment), the third optionally points to a message that the operating system will issue if the syntax of the command is given wrongly by the user, while the fourth points to a string of text which will be used as a response to the command **Help word*, where *word* is the appropriate command keyword (in this case "Test" or "Dummy"). At the end of the entries for the last command in the table there must be a zero byte to indicate the end of the table (line 530).

As you can see, the actual code executed when either of the commands is issued is trivial - all that will happen is that a short message appears together with a beep. In a real module, of course, the code may be much more complex. Note that on entry to the command routine, registers R7-R11 are saved on the stack, since these registers must be preserved across the call. Also saved is the link register R14 which holds the return address from the routine. R13 already points to a stack for you to use, and you must not use R13 for anything else. R0 points to the end of the command as issued (i.e. before any parameters that accompanied the command) while R1 gives the number of parameters. This enables you to read the parameters if the command in question may have them.

The Response Flags

The second word in the command table comprises a set of flags which tell the OS about the command you have implemented. Their function is shown in the table. Bytes 0 and 2 respectively give the minimum and maximum number of parameters. If the user supplies a number of parameters outside this range, the corresponding syntax message (set up in lines 430 and 510) will be issued. In our example we have set the flags so that *Test* must be given without parameters (max and min both zero), and *Dummy* must have either one or two. Incidentally, the operating system expects parameters to be separated by spaces, not commas.

Byte	Contents
0	Minimum number parameters (0-255)
1	OS_GSTrans map for first 8 parameters
2	Maximum number of parameters
3	Flags

In byte 1, each bit corresponds to one parameter (bit zero for the first). If the bit is set, the parameter is passed through GSTrans. This could be useful to translate system variables (e.g. *<MyApp$Dir>*) into filenames, for example.

The flags at byte 3 perform various actions, and you should read the PRM for a description.

The response flags

This is necessarily only a very brief introduction to modules, but it should provide you with the building blocks to create simple modules of your own. As always,

the PRM is the place to look if you need further details, and its coverage of modules is very comprehensive. The Test Module, together with its source code, is included on this month's magazine disc.

Listing 1

```
10 REM            >TestSource
20 REM Program    Test module
30 REM Version    A1.00
40 REM Author     Lee Calcraft
50 REM RISC User Jan/Feb 1995
60 REM Program    Subject to copyright
70 REM            Not Public Domain
80 :
90 DIM code% &1000
100 FOR i%=4 TO 7 STEP 3
110 P%=0:O%=code%
120 [OPT i%
130 ;----------------
140 ;          Module header
150 ;----------------
160 EQUD 0     ;startcode
170 EQUD 0     ;initialise
180 EQUD 0     ;finalise
190 EQUD 0     ;service
200 EQUD title;title string offset
210 EQUD help ;help string offset
220 EQUD command ;command table offset
230 ;----------------
240 ;          Title & help strings
250 ;----------------
260 .title
270 EQUS "TestModule"
280 EQUB 0
290 :
300 .help
310 EQUS "Test Module"+CHR$9+"1.00 ("+
MID$(TIME$,5,11)+")"
320 EQUB 0
330 ALIGN
340 ;----------------
350 ;          Table of commands
360 ;----------------
370 .command
380 EQUS "Test"          ;command name
390 EQUB 0     ;zero terminator
400 ALIGN
410 EQUD testcommand     ;address of code
420 EQUD &00000100       ;response flags
430 EQUD testsyntax      ;invalid syntax
440 EQUD testhelp        ;help text
450 :
460 EQUS "Dummy"         ;command name
470 EQUB 0     ;zero terminator
480 ALIGN
490 EQUD dummycommand ;address of code
500 EQUD &00020001       ;response flags
510 EQUD dummysyntax     ;invalid syntax
520 EQUD dummyhelp       ;help text
530 EQUD 0
540 ;----------------
550 ;          Help & syntax messages
560 ;----------------
570 .testsyntax
580 EQUS "Syntax: *Test (no params)"
590 EQUB 0
600 :
610 .testhelp
620 EQUS "*Test does very little"
630 EQUB 0
640 :
650 .dummysyntax
660 EQUS "Syntax: *Dummy <n> [<m>]"
670 EQUB 0
680 :
690 .dummyhelp
700 EQUS "*Dummy does very little"
710 EQUB 0
720 ALIGN
730 ;----------------
740 ;          Code for *Test
750 ;----------------
760 .testcommand
770 STMFD R13!,{R7-R11,R14}
780 SWI "OS_NewLine"
790 SWI "OS_WriteS"
800 EQUS "The response to *Test"
810 EQUB 7
820 EQUB 0
830 ALIGN
840 SWI "OS_NewLine"
850 LDMFD R13!,{R7-R11,PC}
860 ;----------------
870 ;          Code for *Dummy
880 ;----------------
890 .dummycommand
900 STMFD R13!,{R7-R11,R14}
910 SWI "OS_NewLine"
920 SWI "OS_Write_S"
930 EQUS "The response to *Dummy"
940 EQUB 0
950 ALIGN
960 SWI "OS_NewLine"
970 LDMFD R13!,{R7-R11,PC}
980 ;----------------
990 ]NEXT
1000 :
1010 SYS "OS_File",10,"TestModule",&FFA
,,code%,O%
```

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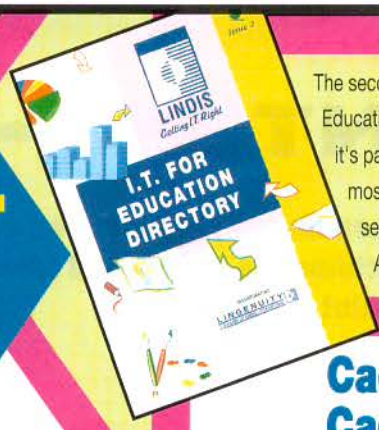

The second edition of the Lindis I.T. for Education Directory is out now - and it's packed with details of some of the most exciting software products and services for anyone using Acorn Hardware.

CableNews® II

CableNews II is an interactive multimedia presentation package that enables the user to create a series of "slides" which can be displayed in any sequence. Within a slide the user can create and control text, graphics, special effects, and applications including sound and replay. CableNews II can be used to create presentations, rolling demonstrations, information-points, bulletin boards and for video overlay.

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Presenter GTi 16v is the latest version of this famous graphing package. It has an excellent pedigree having been extensively refined and developed over the last 7 years in response to feedback from users and the improved capabilities of the Acorn 32 bit computer range.

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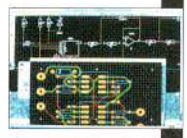

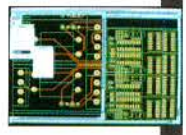

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HINTS & TIPS

Keep sending in your hints on anything relevant to the Archimedes range. And remember, we pay for every hint we publish.

Reducing Flicker when Updating Icons

Lee Calcraft

Even on the faster machines in the Acorn range you can get a certain amount of flicker when updating icons, particularly if these are of the 3D variety; and this is made much more noticeable if they are frequently updated, as they might be with a timer for example.

Here are two ways to dramatically improve the situation. Firstly, if you have a 3D icon that is frequently updated, create a non-3D icon over the top of it, but which is slightly smaller, and update this instead. This way, the result looks exactly the same, but the Wimp does not need to keep redrawing the 3D shading.

Secondly you can issue an FX19 (or WAIT statement in Basic) immediately before you force the icon to redraw. This ensures that the icon will be redrawn at the start of the frame flyback period rather than halfway through a scan.

Correcting Typing Transpositions

David Symes

I, like many others it seems, have a problem - transposition. When I start typing fast I have a small set of words, and particularly conjunctions, that suffer the transposition bug - for example "nad" or "dna" for "and", "himslef" for "himself" and so on. This can be very annoying and create extra editing, so I've come up with a solution.

Impression Style has an auto abbreviation expansion facility and dictionary. I take my transpositions, enter them into the abbreviations dictionary, and hey presto, when typing they are automatically changed to the correct spelling (see pages 216 and 247 of the Style manual for details of setting up an abbreviations dictionary).

One word of caution - if you're a molecular biologist writing a thesis or maybe an article for Nature, auto-correcting a transposition of DNA to AND could lead to a considerable amount of manual editing being required as well!

I have exactly the same problem (it seems to get worse as I get older), and I'm extremely grateful for the feature in DeskEdit that swaps two characters - just position the caret before the first one and press Ctrl-Sh-S. Ed.

More on Masks in Draw

Simon Lipscombe

Several articles and hints recently have referred to the various methods of producing masks in Draw to use with images in DTP work (see *Into the Arc*, RISC User 7:9 and *Hints & Tips*, 8:1). I also find Draw better for creating masks with smooth outlines, but there is a quicker method which involves using Draw's *Interpolate* feature. To see this in action, load a sprite into Draw and create an ellipse around the chosen area, with the fill colour set to none. Then draw a second ellipse over the whole sprite with line colour set to none and fill colour set to white. Select both ellipses (a little tricky since the first is hidden by the second, but it can be done by double-clicking over the hidden object to select it first and then clicking with Adjust on the outer object). Now group them together, move across the *Interpolate* entry on the *Select* submenu and enter a value of 2 into the writable menu item. The job is done like magic! Finish off by selecting all and grouping together.

You can of course use this method to create masks of any shape (see illustration). First draw the shape around the sprite using the most appropriate Draw tool, then duplicate the shape, enlarge it and proceed as for the two ellipses above. You can even make the second shape different from the first, but you may find you get a very odd effect.

An irregular mask using Simon Lipscombe's method

...And Yet More on Masks with Draw

Michael Turner

For those of you who have a copy of *PathTools* (RISC User 6:5 magazine disc) there is a much simpler way of creating masks in Draw than the method outlined by Colin Singleton in *Hints & Tips* (8:1). First draw an ellipse, and then a rectangle around it. Save the resultant Draw file. Drag the file to PathTools and save the resulting *Altered* file. Now load the *Altered* file back into Draw, and select the drawing, which now consists of only one path. Now set the fill colour to white, and the line colour to black if you want a border or white if you don't.

Pinboard Roots

Lee Calcraft

You cannot drag a root directory to your pinboard, even though this can be a very useful thing to do, especially if remote servers are involved. But you can achieve the same result by editing the corresponding pinboard or deskboot file.

Simply drag to the pinboard a file contained in the root directory that interests you, and save the pinboard or deskboot file. Now load it into Edit or DeskEdit, and edit the corresponding line so as to remove the leaf name of the file and the preceding dot, and save it back.

Next time you boot up you will have a nice blue folder called "$" stuck to your pinboard.

16 million Greyscales with PhotoTouch

Richard Harris

Although PhotoTouch's manual does not say so, it is technically possible to convert 24-bit images to monochrome with a full 16 million greyscale. Choose *Process-Translate* from the menu and for all the colours pick 50% of R, G and B. Also, selecting any tool from the paint toolbox (excluding cut, paste, airbrush and slider) allows you to change just part of the image to greyscales.

Problems on the Risc PC with Games and CMOS RAM

Ivor Clarke

So you've just got your new Risc PC and would like to play a few games... be warned! Always make a copy of your CMOS RAM settings before you start. Some games will reset the CMOS RAM so that you can't get back to the desktop on a reset. With the new boot system on the Risc PC this can be devastating. All you will see when you reset is a black screen with **Supervisor* at the top. On page 68 of the Welcome Guide it tells you to ask your supplier for help if you get this message - great at 8.30 pm on a Saturday night! You can in fact get back to the desktop by entering *Desktop* at the star prompt, but on the next reset or power-on you're back to the supervisor screen again. A power-on with Delete held down will reset everything back to its default state, but this is a nuisance if you have carefully set up your own configuration.

In the *Diversions* directory on the hard disc is a *Tools* directory containing an application called *SaveCMOS*. If this is run, and the settings saved to a floppy, *before* you try any games, you will be able to get back to your original state if you find the machine reconfigured after playing a game.

Total automation in C with DeskEdit 4

Lee Calcraft

The DeskEdit 4 manual explains how to automatically compile a source when it is saved from DeskEdit, but it is also possible to save, compile and run all as a single action.

What you need is an obey file containing something like the following:

```
*DeskEdit_TB_Close
wimpslot -min 1456k
amu
IF sys$returncode=0 then sound 1 &FFF1 70 4 else
sound 1 &FFF1 200 10
If sys$ReturnCode=0 then echo *** Finished OK ***
If sys$ReturnCode<>0 then echo !!! FAILED !!!
If sys$ReturnCode=0 then wimptask <Obey$Dir>
```

This file should be called by the *task_window:* line in your source files - e.g.:

```
task_window: SCSI::SCSI-1.$.!MyApp.V
```

so that if you save with Ctrl-Sh-F3 it will automatically be run in a DeskEdit task window. The file itself essentially calls *amu* to compile your code, but before doing this it closes any previous throwback window, and sets the wimpslot for the task window.

After compiling it checks to see whether the compilation was successful. If not it issues a high beep, and tells you so. Otherwise you get a more positive message and a low beep, and the newly compiled application is automatically run.

EASY C++ - THE EASY WAY TO LEARN OR DEVELOP YOUR SKILLS IN C++

Easy C++ is the first implementation of the in-vogue object oriented programming language C++ written specifically for Acorn RISC OS systems.

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- Integrated ARM assembler.
- Supports the *Throwback* facility allowing errors to be passed back to editors such as DeskEdit, Zap and StrongEd.
- Superb source-level debugger for C programs (C++ version available in next release). Purchase Easy C++ now and receive an automatic upgrade to the next release.
- FreeWare C library *DeskLib* provides functions for writing WIMP programs.

Easy C++ is not a C++ to C translator but compiles C++ source directly to ARM code making it quick and easy to use. Unlike other systems it runs in only 2MB RAM.

The original highly acclaimed Easy C package is still available which is ideal for programmers wishing to learn or develop their skills in C. An upgrade from Easy C to Easy C++ is also available.

For more information phone 0727 840303 or to order direct call 0727 840305.

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On Line with Online

Showing now on a set-top box near you...

Alan Wrigley glimpses a bit of Acorn's future

Recently I waxed lyrical in the pages of RISC User (*Interactive Multimedia for All*, 7:9) about the promise and potential of interactive television as seen by Acorn and its new offshoot, Online Media. The promised trial has now started, and for the last couple of months 10 households in the Cambridge area have been switched on to the future. I recently got the chance to see the trial service in operation, and although at the moment it is very limited, the potential can clearly be seen. I take back none of the wilder predictions in my earlier article!

I travelled up to Cambridge expecting to see families gathered round their TV sets, enthralled at the wealth of information pouring out, and I was ready to ask searching questions about how their lives had been changed by this technological revolution. Sadly, my expectations were rather premature! In fact the trial at this stage is firmly based around testing the technology rather than the content, and no-one's life is likely to be changed by browsing through half a dozen pages of the Woolworth catalogue, or by listening to Fleetwood Mac's *Rumours* album (18 years ago, maybe...).

The Home Shopping front page.

What *is* on offer is a preview of what's to come. The system consists of the set-top box (STB) and a natty little controller (far more impressive looking than the average remote handset). Switching on the STB brings up a title page, and entering your PIN number on the controller gives you access to the Online Media Title page. This offers a choice of the main services - News, TV Previews, Documentaries, Games, Education, Shopping, Music and Films. Choosing one of these leads to a sub-page with further choices - for example, Music might be subdivided into Pop, Rock, Classical, Jazz etc.

The News Service front page.

It's when you get to this sub-level that seekers of a mind-expanding experience hit the ground with a bump. Most of the options simply aren't implemented yet. For example, the only music on offer is Rock, and there aren't many albums to choose from. Nevertheless, if you're a Fleetwood Mac fan (and you're not one of the billions who already have *Rumours*), you can listen to it in true CD quality. As the system expands and more music is added, it will certainly beat going down to the library to hire a CD that's been used as a breakfast plate. And eventually you will be able to choose a selection of music from various albums, press a button, and have your own CD pressed from the selection and delivered to your door.

Similarly, the video choice is limited at present. Only the *Action films* option works, and you can choose from 6 action films including Top Gun, Star Trek and A Fish Called Wanda (some mistake, surely?). The really nice thing about the system is that you can preview the film first to see if you like it, and only pay to view if you decide it's what you want. The video quality (all MPEG of course) is superb, and the preview of Top Gun in particular is breathtaking. You will be able to zip forwards or backwards through a film at fast speed, just as you can with a VCR, and you can also watch in slow motion. There are some technical problems still to be sorted out (e.g. slight jerkiness occasionally, presumably caused by the decompression algorithm), but these are relatively minor.

Probably the most worthwhile service at this early stage is the News. Every night at 10pm an Online employee videos the ITN News from

Anglia, together with the weather and local news, and feeds it compressed to the system. If you come home at 11 and want to see the news, it's all there, and no more head wear on your VCR. At present the program is put onto the system in two halves, so that you can start watching around 10.20, but no doubt it may be possible in the future to compress it onto the store in real time, so that if you realise at 10.03 that you've missed the news, you just start watching the whole thing there and then with a 3-minute time delay.

Bricks and Squids

The 10 trial homes are all on Cambridge Cable's fibre optic cable network. The Online Media data is routed through the network using ATM (asynchronous transfer mode) at about 2 Mbits/sec. The hub of the system is a 16 Gigabyte store at OM's headquarters, known as a "disc brick" since it's basically just a concretion of SCSI hard drives. Data is pulled off the brick at 100 Mbits/sec by a "squid" - a multi-channel switch that squirts the data in the right direction when requested by the user. The squid has been developed by SJ Research who have several years experience in designing ATM networks. Obviously 16Gb won't hold the entire Warner Brothers back catalogue, so the next step could be a "disc wall". Much more likely is that information providers will feed data into the system from their own storage areas, so that eventually the network will be a window onto a huge national, or even global, resource.

Plans for the near future include an expansion both of services (banking, travel information, educational material etc.), and customers (up to 1000 by the end of 1995, including a couple of schools early in the year). The set-top box will also be improved (versions 2 and 3 are already under development), as well as SJ's ATM switches, which will have an improved bandwidth enabling them to channel more data to more users at a faster rate.

One final thought: if setting up the system poses technical problems for Online Media and its partners, think of the huge challenge facing TV companies and advertising agencies. If you can see what you want when you want, the concepts of "prime time" and "watershed" no longer have any meaning. And what's more, how do you actually get people to watch adverts when they can fast-forward over them? The answer to these questions is going to tax the best brains in the advertising industry for some time to come!

So this is where interactive multimedia is at today. As the saying goes, this one will run and run.

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TECHNICAL QUERIES

Alan Wrigley answers more questions

Q *Dear Sir*
Is there an application which allows you to control the colour of the directory icon (the blue folder)? It would be useful to be able to change the standard blue for some of the brighter Wimp colours to make directories stand out more.

T. Stephens

A To change the standard icon to a design of your choice doesn't really need an application - all you have to do is to tell the operating system that you want to use a different sprite. Among the sprites built into the machine's ROM is one called *directory*, and this will normally be used whenever the Filer wants to display a directory. However, to replace any of the built-in sprites, all you have to do is to put another sprite of the same name into the Wimp sprite pool, and this will then be used instead. Using the command **IconSprites* on any sprite file will put all the sprites in that file into the pool. This is the same process that is done automatically whenever an application is seen by the Filer, and ensures that the application's sprite will always be accessible when it needs to be displayed. So all you need to do is to create a sprite file containing a sprite of your own design called *directory* (and of course any of the other standard sprites that you might want to redefine), and perform an *IconSprites* command on it. You could set this up in your boot file as follows:

```
IconSprites <pathname>
```

where *pathname* is the full pathname of the sprite file.

If you have last month's RISC User magazine disc (8:2) you can go one stage further than this and have separate sprites for each directory in your system, by using the application *DDD*.

Q *Dear Sir*
I make my menus with DATA statements. I need to be able to set up context-sensitive menus where the text of an item in the menu depends on the icon over which the Menu was opened. Can you help?

Jason Keeler

A Unlike a window or icon definition, a menu structure only exists at the location in your workspace in which you create the menu; in other words, when you call "Wimp_CreateMenu" the data is taken from the block of memory you specify, but no copy is kept by the Wimp and the contents are only relevant to the Wimp at the moment of making the call. This makes it easy to alter menus while the program is running, since you can change the contents of the block at any time you like.

To create context-sensitive menus, all you need to do is to put the required menu item text into the menu block before calling "Wimp_CreateMenu". It's probably better to arrange for the menu items concerned to be indirected (in fact you *must* do so if the length of the text may exceed 12 characters). You can then simply alter the text in the indirected buffer depending on the context, and the menu block itself remains unchanged.

Q *Dear Sir*
Is it possible to get at directory file data using SWIs? The use of Cat, Info etc. produces a formatted output which can be indirected, but involves a lot of processing.

Alec Matthews

A This can be done using the SWI "OS_GBPB". This can read the names and details of files in a specified directory into a buffer, either one at a time or any number in one go. Assuming the files are date-stamped and filetyped, the entry parameters are:

R0 = 12
R1 = pointer to directory name
R2 = pointer to output buffer
R3 = number of names to read
R4 = offset of first item to read
R5 = buffer length
R6 = pointer to (wildcarded) name to match

On exit:

R3 = number of objects read
R4 = offset of last item read (-1 if finished)

The buffer will contain the following information for each file read (word aligned):

R2+0 High byte of date stamp
+4 Low byte of date stamp
+8 Length
+12 File attributes
+16 Object type
+20 Filetype
+24 Object name (null terminated)

The best way to read a directory catalogue is to make the call repeatedly in a loop, since this allows you to cope with directory structures containing any number of entries. Start with R3=1, R4=0, R5=36 and R6 pointing to a wildcard string ("*"). Repeat until R3=0, reading the name at R2+24 each time. R4 will automatically update each time the call is made, ready for the next.

RISC PC's

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Blinds

Alan Wrigley looks at a new utility from Quantum Software that takes over where sticky backdrops leave off

Product Blinds	
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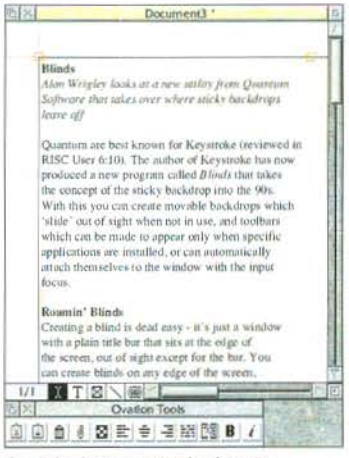
Price	*£19.95 inc. VAT*

Quantum are best known for Keystroke (reviewed in RISC User 6:10). The author of Keystroke has now produced a new program called *Blinds* that takes the concept of the sticky backdrop into the 90s. With this you can create movable backdrops which 'slide' out of sight when not in use, and toolbars which can be made to appear only when specific applications are installed, or can automatically attach themselves to the window with the input focus.


Document3
Blinds
Alan Wrigley looks at a new utility from Quantum Software that takes over where sticky backdrops leave off
Quantum are best known for Keystroke (reviewed in RISC User 6:10). The author of Keystroke has now produced a new program called Blinds that takes the concept of the sticky backdrop into the 90s. With this you can create movable backdrops which 'slide' out of sight when not in use, and toolbars which can be made to appear only when specific applications are installed, or can automatically attach themselves to the window with the input focus.
Roamin' Blinds
Creating a blind is dead easy - it's just a window with a plain title bar that sits at the edge of the screen, out of sight except for the bar. You can create blinds on any edge of the screen.
Ovation Tools

A tool window attached to an Ovation document

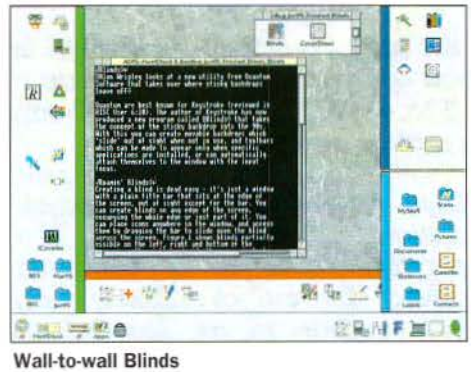
Roamin' Blinds

Creating a blind is dead easy - it's just a window with a plain title bar that sits at the edge of the screen, out of sight except for the bar. You can create blinds on any edge of the screen, occupying the whole edge or just part of it. You can place icons anywhere in the window, and access them by dragging the bar to slide open the blind across the screen. Figure 1 shows blinds partially visible on the left, right and bottom of the screen; on the right-hand side there are in fact two blinds, which can move independently.

Not only does this enable you to keep all your messy icons out of sight until you need them, but the icons can be large or small, with or without text, and can be locked to a grid. Furthermore, you can specify what happens when you double-click on the icon. Normally you would be placing applications and files on the blinds to be run when double-clicked (which is the default action of Blinds). But you can execute any command - which could of course be to run an Obey file containing more commands, and you can tell Blinds to close the blind on a double-click, so it slides neatly to the edge once you have run your application or whatever.

The Right Tool for the Job

If you create a tool window instead of a blind, this will appear on the screen just like a normal window (and will have all the same icon options as for blinds). However, you can link this to an application, so that the tool window only appears when that application is installed. Not only this, but you can choose to have it open only when that application has the input focus, and if you want you can attach the tool window to a specified position on the input focus window. Used in conjunction with Keystroke, this would enable you to create your own toolbars for any application, with icons to perform any action you like. Figure 2 shows a tool window attached to an Ovation document. To create this I borrowed some icons from the RISC User Ovation Toolbox (7:3).



Wall-to-wall Blinds

Background Operation

The third possible type of object is a backdrop. This combines features from both blinds and tool windows. The backdrop covers the whole screen and stays in one place as you would expect, but you can choose all the same options for the icons and their actions as before, plus the tool window's ability to link to an application and/or its input focus window. This means you could have several backdrops, each becoming visible when the appropriate application has the input focus. However, you can't have a picture on your backdrop as you can with other types of pinboard (though this is scheduled for a later version).

Conclusions

This is a very useful application, which went straight onto my icon bar as soon as I saw it. If you're looking for something more than the average sticky backdrop can give you, you'll love this.

HARDWARE AND SOFTWARE EXPANSION FOR ACORN COMPUTERS

DUAL RS423 SERIAL INTERFACE - two additional RS423 serial interfaces for communicating with RS423 or RS232 devices eg modems (in order to use bulletin boards), printers, plotters, instruments, etc. Up to four cards can be fitted in a computer.

IEEE488 INTERFACE - enables up to 14 test and measurement instruments, from well known manufacturers such as Hewlett-Packard, Fluke, Philips, Tektronix, etc. to be connected to the computer. For example, voltmeters, oscilloscopes, spectrum analysers, function generators, counters, logic analysers, programmable power supplies, plotters, printers, etc.

16 BIT PARALLEL I/O - provides two separate 16 bit input/output ports. Other facilities include four 16 bit counter/timers, two 8 bit shift registers and eight interrupt inputs. Applications range from measurement and control to high speed data input and output.

12 BIT ADC - provides eight single ended inputs each with an input voltage range of -5 to +5 Volts. Up to 166,000 samples per second can be taken.

STEbus INTERFACE - overcomes the limitation of a maximum of four expansion cards in a computer by enabling the use of industry standard STEbus boards in an external input/output sub-system for measurement and control applications.

SCSI DEVICES - internal and external hard disc drives, magneto-optical removable disc drives, tape streamers etc.

FORTRAN 77 COMPILER - completely compatible with the now discontinued Acornsoft compiler.

GINO-F 3D, GINOGRAF, GINOSURF and HERSHEY+ - the FORTRAN subroutine graphics libraries.

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INTELLIGENT INTERFACES

Three CD Drives Under the Spotlight

Alan Wrigley examines some recent arrivals on the market, from Cumana, Uniqueway and Eesox

CD-ROMs are no longer an expensive luxury in the computer marketplace. Compact discs generally are taking over the world - audio CDs, video CDs and photo CDs have gained acceptance with the mass market consumer, and CD-ROMs are selling like hot cakes on all computer platforms.

In this review I will be looking at three recently launched CD drives. Notice that I have purposely called them "CD drives" rather than "CD-ROM drives" - virtually all modern drives can read all the various types of compact disc mentioned above, and not just CD-ROMs. The Cumana drive is aimed squarely at the Risc PC, since it is internally fitted and has an IDE interface, but the other two drives are equally suitable for older machines as they are SCSI devices (which means you must have a SCSI card in the computer) and come in both internal and external versions (and Cumana has other models that can be used with older computers).

Before describing the drives themselves, there are a few things you need to know if you are looking for a drive. Firstly video CDs (e.g. CD-i) come in two different formats, known as *Green book* and *White book*. Green book is an older standard adopted by Philips, while White book is a newer standard adopted by almost everyone else. Naturally the two are incompatible (you wouldn't expect otherwise, would you?). Some CD drives will handle both formats, while others will only read White book. Since Philips have now adopted the White book standard, there should be no problem with current products, so unless you have a store of old Green Book CDs it's unlikely to influence your choice of drive.

There are other factors involved in making a choice of drive. If you want to read photo CDs you will ideally need a *multisession* drive (and a version of CDFS that handles photo CD - 2.21 or later). "Multisession" refers to the fact that photo CDs often have different chunks of data written to them at different times - for example you can take your photo CD to be updated each time you shoot a new roll of film. If the drive is only single session, it will only be able to read the first such chunk. All modern drives (including those described here) are multisession types.

The speed of the drive is determined with reference to the data transfer rate of a single-speed drive, which is around 150Kb per second. Most drives these days are at least double speed, and that applies to the three here. In practice this makes them slower than a hard drive but acceptable unless you're in a real hurry. If you need to shift data at intercity speeds, you can get triple and quadruple speed drives - at a price.

Like a golfer, you also need to decide if you want a caddy or not. Drives are designed either for caddy loading or direct loading, and there are advantages and disadvantages of each method. A caddy protects the CD but is more fiddly to use since you have to load and unload the CD from the caddy each time you want to use another. Direct loading is more convenient - just like loading an audio CD player - but if you have an internal drive in your Risc PC, you can't normally use it in tower mode with a caddyless drive - the CD would just fall out when you open the tray. The Eesox drive plays safe and uses a caddy, while the other two use direct loading. But... while the Cumana drive can't be used in tower mode, the Uniqueway one can, thanks to a spring-loading mechanism that holds the CD in place - one up to Uniqueway.

Eesox "Silver" CD Drive

The Eesox Silver range is brand new, and introduces a feature hitherto unknown on the Acorn platform - cheapness. You may have seen adverts in PC magazines for drives at around £100 and wondered why you have to pay double that for a drive that works with your Acorn. Unfortunately you can't just buy any old drive and connect it to any old computer - you need specific driver software, and the Acorn community doesn't have a mass market to drive down prices. But... Eesox's secret is that they have developed a new driver which will work with *any* CD drive that is SCSI-2 compatible (though you only actually need a SCSI-1 card in your computer to use it). Most new drives fall into this category, so with a copy of Eesox's driver at £25 you should be able to go out and take your pick. Eesox have done just that and chosen a Sony drive for their Silver range, which retails at just £109 for the internal version - definitely one up to Eesox.

Not that the drive appears cheap in any way. It is a sturdy, stylish unit (the external version was supplied for review) that is both White Book and Green book compatible. There is a standard 3.5" audio socket on the front, with a volume control beside it, which outputs nice crisp sound from

The Eesox Silver external drive - sturdy and stylish.

audio CDs direct to the amplifier or headset of your choice. The caddy loading is very fast and smooth, and also positive, unlike some drives which seem to spit the caddy out again unless you press it in with just the right degree of force.

Initially I experienced some problems with this drive, as it seemed unable to transfer large amounts of data for very long before giving an error. A quick call to Eesox told me that there was a problem between the Sony drive and versions of CDFS prior to 2.3, but that using Eesox's *CDFast* utility would overcome it. They were quite right - I had no further problems after loading CDFast. The latest news is that Eesox have managed to rewrite their driver to get around this, so there should be no further problems for anyone.

Media Vision CDR-H93RMV from Uniqueway

While not having a snappy name like Silver or Indigo, the Media Vision drive is a neat little unit manufactured by Hitachi, and is White Book compatible. Internal and external versions are available. Audio output is via a flying lead which plugs into pins on the computer's circuit board, from where it is routed through the computer's own headphone socket. Unfortunately this attenuates the internal sound system to such a degree that you can barely hear it, and so is unsatisfactory if you rely on warning beeps etc. However, you can always connect the flying lead directly to your hifi, or wait for Uniqueway's next model which will have an audio socket on the front.

Installing the internal unit could be a problem if you're not familiar with your Risc PC's innards. The instructions are written for a standard PC and don't make it clear where to connect the audio lead on an Acorn, or which way round to plug the SCSI cable into your SCSI card. Actually fitting the drive in the machine is no problem, though.

The drive is very nice to use. The tray springs out with a light touch on the eject button, and slides back in with gentle pressure on the tray itself. The CD clips into place on the spring loader and is held firmly, so using it in tower mode is a doddle. However, when fully extended the tray seems somewhat precarious, and I would fear for its safety in a tough environment such as a school unless used under supervision.

Cumana's Indigo Drive

Cumana's internal drive for the Risc PC comes in two variants: the 300i and the 300iA, both White Book compatible. The difference between them is that the 300iA has an audio mixer to enable the sound from the computer and the drive to be mixed. The unit has a smart design, and like the Uniqueway drive, the tray springs in and out positively, though not as smoothly. However, the tray is sturdier than Uniqueway's and more likely to stand up to rough use. As I said before, you can't use the computer in tower mode since there is nothing to hold the CD in place. Like the Eesox drive, there is a headphone socket and volume control on the front.

Cumana's 300iA drive needs no SCSI interface.

As Chris Drage says (see inset on page 65), fitting is quite straightforward, though the thought of poking around inside your Risc PC may be a little daunting, and you do have to be very careful when removing and replacing connectors, since the circuit boards are not always very firmly supported.

Comparisons

In terms of performance there is little to choose between the Eesox and Cumana drives. They both appear to operate at around the same speed (as indeed they should!). However, I was

Look, no caddy!
The Uniqueway drive used in tower mode.

surprised to find that the Uniqueway drive, while also supposedly double speed, seemed to be 30-40% slower than the other two, both for data transfer and for access, which is a definite black mark. Sound quality from audio CDs was excellent on all three, with no discernible difference between them.

All the drives have pros and cons. The Eesox drive is inexpensive and solidly made, but requires a SCSI interface and has caddy loading. Uniqueway's drive is caddyless and can be used in tower mode, but also requires SCSI, is much slower, has no audio socket and does not look as sturdy as the others. The Cumana drive requires more effort to fit and can't be used in tower mode, but you don't have to have SCSI and you get the audio mixer if you buy the 300iA. Bear in mind however, that fitting the Cumana device prevents you from fitting a 2nd hard drive to your machine. The choice is yours.

Product *Silver CD drive*
Supplier *Eesox*
5 Hillfield Road
Comberton
Cambridge CB3 7DB
tel. 01223 264242
Price *£109 ex. VAT (internal)*
£179 ex. VAT (external)
plus £10 for CDFast

Product *Media Vision CD drive*
Supplier *Uniqueway*
42 Cruys Road
Cardiff CF2 4NN
tel. 01222 644611
Price *£160 ex. VAT (internal)*
£215 ex. VAT (external)

Product *Indigo 300i and 300iA CD drives*
Supplier *Cumana Ltd*
Pines Trading Estate
Broad Street
Guildford GU3 3BH
tel. 01483 503121
fax 01483 451371
Price *£199 ex. VAT (300i)*
£249 ex. VAT (300iA)

Apprehensive about installing your own CD drive?

Chris Drage explains how he fitted one in his Risc PC in half an hour without problems

I chose Cumana's 300iA to upgrade my Risc PC. I wanted the audio mixing system to enable the sound from the computer and the CD-ROM to be mixed and output together. This is an important consideration if you propose to access PC CD-ROMs when the internal 486 card is available. The IDE drive is also economic on podule slots: it doesn't need any!

Cumana provide all the parts for you to install it yourself. At first I was rather sceptical as to whether the average user would be able to manage this. However Cumana's detailed instructions and the ease with which the Risc PC can be upgraded soon allayed any doubts. The only tools required are a medium sized cross-head screwdriver and a sharp knife. As with all dismantling and reassembly, it is vital to be organised, systematic and in the right frame of mind. Don't try doing the job if you are at all tired. Removing the backplane and various cables must be done carefully to avoid damage to pins or contacts. The blanking plate at the front of the computer must be cut out, but I found that a knife alone was not enough, and some filing was needed to tidy up the aperture.

Fitting the IDE board and assembling the CD drive is very straightforward, but care is needed when fitting the new cables. Although they are all prefolded where necessary, routing them carefully takes a little time. The 300iA has a small sound board mounted on the IDE interface. The cable running from this connects on the motherboard with Link 14 (LK14). This is situated at the back right-hand-side (when viewed from the front of the computer). If you have an older Risc PC this link may be missing (mine was), in which case installing the link is a job for a dealer (for which there may be a small charge). As a short-term solution I completed the installation using the headphone socket on the drive for the external speakers. Next time I have a week spare I shall drop the computer into a dealer for the upgrade.

The final job is to spend a few minutes installing the driver software and off you go. Overall, I felt Cumana offer a high quality product with their Indigo drive. It was straightforward to install, and it all works extremely well.

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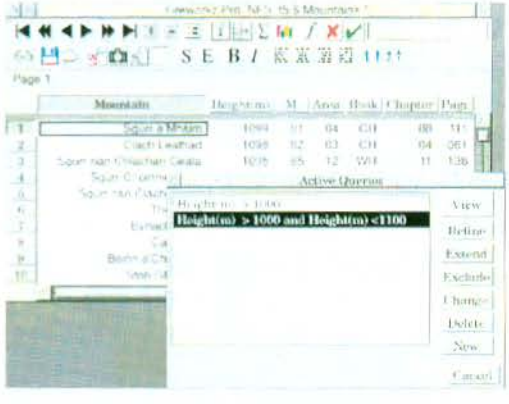
word

recordz

resultz



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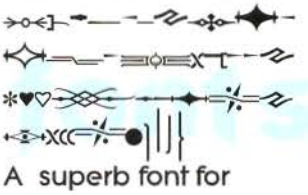

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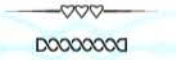

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RISC user

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PhotoBase Decades Picture

A sample picture from the *PhotoBase Decades* CD-ROMs reviewed in this issue (page 28).

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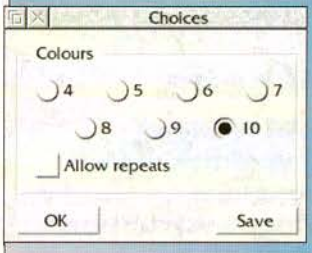
Cracker

by Richard Taylor

A great implementation of a popular game in which you must crack the code by guessing the correct sequence of coloured squares.



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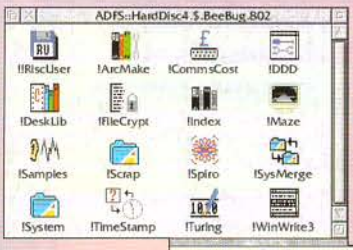
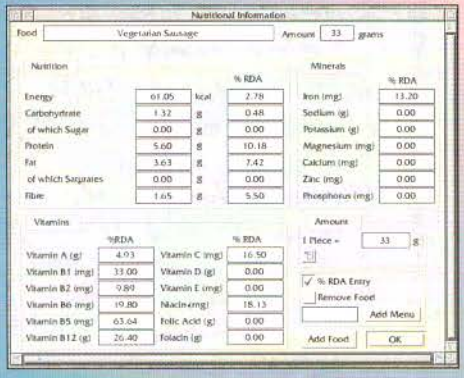
ArcScan index for this month's RISC User.

Diet Analyser

by Andrew Benson

Hands up all those who have made a new year resolution to watch what they eat... this program could be just what you need! It will tell you the nutritional value of the food you eat, choose specific types of diet for your requirements, and analyse your meals for you precisely.

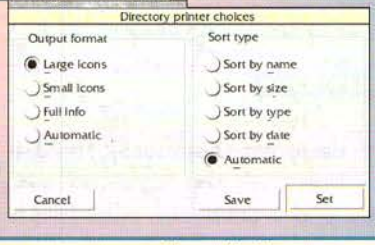




Printer Directory

by Nathan Micholey

Having trouble remembering the contents of all your directories? This handy little utility enables you to print an image of the directory on your printer, exactly as it appears in a Filer window. Just file the printouts away and you have a permanent record for easy reference.



Ctrl-A Disabler *by Andrew Rowland*

A handy little module which will disable Ctrl-A when typed with the left hand - a keypress which is the bane of many users' lives since in many applications it marks the whole text ready for deletion. See *Just-a-Page* (page 14) for more details.

Risc PC Graduated Text *by Lee Calcraft*

Create your own professional-looking captions with colour-graduated text using the techniques described in our article on page 20 of this issue. The program on the disc gives an example of what can be achieved.

MAGAZINE DISC

January/ February 1995

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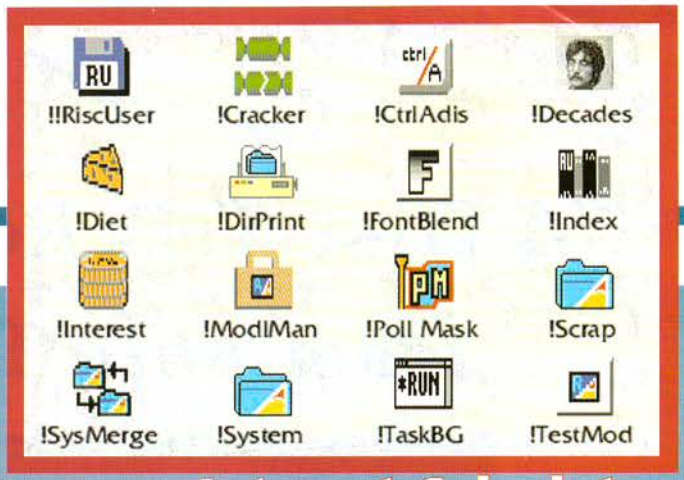
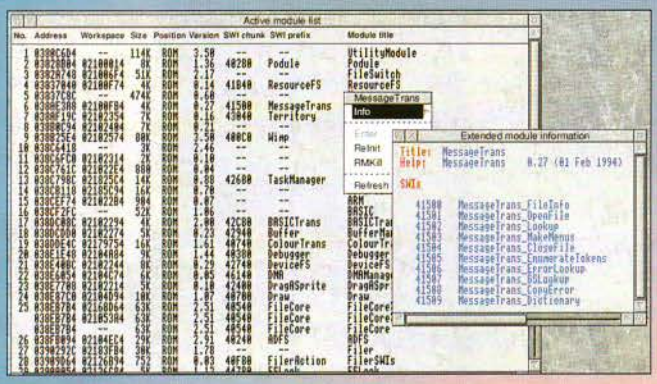


Module Manager Update

by Paul Witheridge

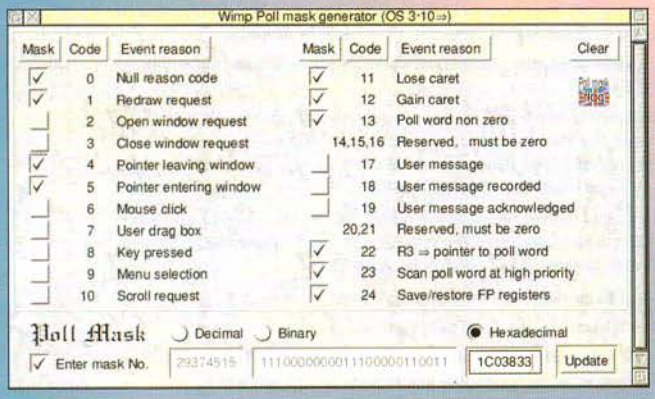
The Module Manager by Alex Hayward was originally published in RISC User 7:6. This major update makes the application suitable for the Risc PC, and also adds many new features including interactive help, extended module information including SWIs supported, and a SWI name/number converter.



Poll Mask Editor

by Mike Whiteman

One of the biggest headaches for Wimp programmers is calculating flags for masks etc. In RISC User 6:9 we published a poll mask editor to work out the values of Wimp poll masks for you, and this has now been significantly updated. The new version is easier to use, and also supports interactive help.



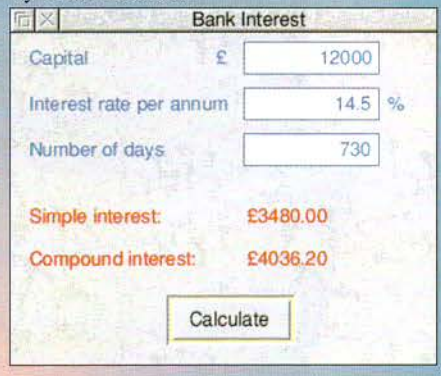
Test Module

by Lee Calcraft

Our article on page 50 tells you how to create a relocatable module. On the disc you will find a copy of the module described in the magazine, together with the source code which you can use as a basis for creating your own modules.

Interest Calculator

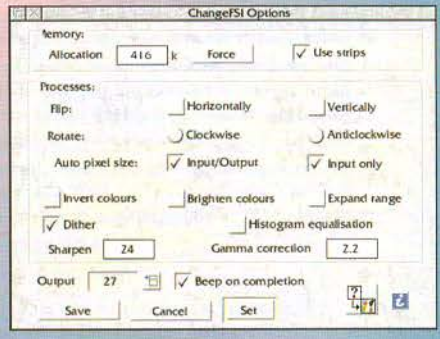
by Gillian Bobbett



If you get confused by interest rates (and who doesn't?) this program will help you keep your hair in place. Just give it the figures and the timespan, and it will calculate simple and compound interest for you in an instant.

Background Multitasking

by Thomas Down



Two applications which demonstrate the use of pre-emptive multitasking using the TaskWindow module, as described on page 46 of this issue. The first program shows how complex calculations can be done in the background, while the second provides a multitasking front end for version 0.90 of Acorn's ChangeFSI to allow it to process images in the background.

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Both drives are suitable for any model of Acorn RISC computer with an Acorn compatible SCSI interface. They require CDFS 2.2 (contact your SCSI board supplier if you require an upgrade).

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